P-A STACKS
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November 1977 Number 399-Part I

Solar-Geophysical Data prompt reports

Data for October 1977–September 1977

Explanation of Data Reports Issued as Number 390 (Supplement) February 1977

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Solar - Geophysical Data

NO. 399 NOVEMBER 1977

Part I (Prompt Reports)

DATA FOR
OCTOBER 1977
SEPTEMBER 1977

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BOULDER, COLORADO

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SOLAR - GEOPHYSICAL DATA

No. 399

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Director
Solar - Terrestrial Data Services Division

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Note: A = Part I, B = Part II.

386A 22 listed under 1976 Aug shows that data for August 1976 were contained in *Solar-Geophysical Data* Number 386 - Part I beginning on page 22.

OCTOBER 1977 DATA

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ALERT PERIODS

INTERNATIONAL URSIGRAM
AND WORLD DAYS SERVICE

OCTOBER 1977

PRESTO MESSAGES (THE RAPID REPORT OF MAJOR EVENTS)

BOULDER 12/0245Z PRESTO MANILA 120154Z TENFLARE 2000 FLUX UNITS 120151Z DURATION 24 MINUTES.

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions: Location Lat-Long	Flares: No. of Total	Flares: M	Flares: X	Outstanding events	Forecasts: Date	Forecasts: Location Lat-Long	Forecasts: Desc[a]	Alert Situations
274	1	30	77	97	05	N15E07	1	0	0		1	N15E07	Q	SOLQUIET MAGQUIET
						N17W52	0	0	0			N17W52	Q	
						S20E48	0	0	0			S20E48	Q	
						S21E51	0	0	0			S21E51	Q	
						S26W34	0	0	0			S26W34	Q	
275	2	01	76	95	03	N13W05	0	0	0		2	N13W05	Q	SOLQUIET MAGQUIET
						N16W67	0	0	0			N16W67	Q	
						S20E38	0	0	0			S20E38	Q	
						N22W42	0	0	0			N22W42	Q	
276	3	02	75	93	07	N19W19	1	0	0		3	N19W19	Q	SOLQUIET MAGQUIET
						N32W14	0	0	0			N32W14	Q	
						S20E23	0	0	0			S20E23	Q	
						N22E26	0	0	0			N22E26	Q	
						N21E70	0	0	0			N21E70	Q	
277	4	03	62	97	10	N15W31	1	0	0		4	N15W31	Q	SOLQUIET MAGQUIET
						N31W24	0	0	0			N31W24	Q	
						S21E05	0	0	0			S21E05	Q	
						N20E12	0	0	0			N20E12	Q	
278	5	04	78	99	10	N15W45	1	0	0		5	N15W45	Q	SOLQUIET MAGQUIET
						N31W38	0	0	0			N31W38	Q	
						S22W03	0	0	0			S22W03	Q	
						N21W00	0	0	0			N21W00	Q	
279	6	05	66	109	08	N12W61	1	0	0		6	N12W61	E	SOLALERT 06/12 MAGQUIET
						N29W53	1	0	0			N29W53	Q	
						N20W12	0	0	0			N20W12	Q	
						N10E84	1	1	0			N10E84	E	
						S23W15	0	0	0			S23W15	Q	
280	7	06	71	104	07	N14W79	0	0	0		7	N14W79	Q	SOLALERT 07/XX MAGQUIET
						N30W68	5	2	0			N30W68	A	
						S22W32	0	0	0			S22W32	Q	
						N20W26	0	0	0			N20W26	Q	
						N06E68	4	2	0			N06E68	A	
281	8	07	90	106	05	N14W87	0	0	0		8	N14W87	Q	SOLALERT 08/XX MAGQUIET
						N30W75	0	0	0			N30W75	A	
						S22W40	0	0	0			S22W40	Q	
						N19W34	0	0	0			N19W34	Q	
						N05E60	2	0	0			N05E60	A	
						S33E08	0	0	0			S33E08	Q	
						N15E63	0	0	0			N15E63	Q	
282	9	08	69	104	06	N30W91	0	0	0		9	N30W91	Q	SOLALERT 09/XX MAGQUIET
						S22W56	0	0	0			S22W56	Q	
						N19W54	0	0	0			N19W54	Q	
						N06E42	9	0	0			N06E42	E	
						N13E43	0	0	0			N13E43	Q	
						N20E88	1	0	0			N20E88	Q	
283	10	09	66	101	04	S23W73	0	0	0		10	S23W73	Q	SOLALERT 10/XX MAGQUIET
						N20W67	0	0	0			N20W67	Q	
						N07E28	3	0	0			N07E28	E	
						N18E77	0	0	0			N18E77	Q	
284	11	10	66	97	03	S22W84	0	0	0		11	S22W84	Q	SOLALERT 11/XX MAGQUIET
						N20W79	0	0	0			N20W79	Q	
						N07E15	0	0	0			N07E15	E	
						N18E63	0	0	0			N18E63	Q	
285	12	11	38	96	05	N06W00	0	0	0		12	N06W00	Q	SOLNIL MAGQUIET PRESTO
						N19E47	0	0	0			N19E47	Q	
286	13	12	69	101	28	N06W13	2	0	1		13	N06W13	E	SOLALERT 13/XX MAGALERT 13/16
						N28W05	0	0	0			N28W05	Q	
						N20W63	0	0	0			N20W63	Q	
						N18E32	0	0	0			N18E32	Q	
						N23E84	0	0	0			N23E84	Q	
287	14	13	99	99	15	N07W25	3	0	0		14	N09W25	E	SOLALERT 14/XX MAGALERT 14/15
						N30W19	1	0	0			N30W19E		
						N20W78	0	0	0			N20W78	Q	
						N18E22	0	0	0			N18E22	Q	
						N22E71	0	0	0			N22E71	Q	
						N18E08	0	0	0			N18E08	Q	
288	15	14	77	99	08	N06W38	3	0	0		15	N06W38	E	SOLNIL MAGALERT 15/18
						N18E08	0	0	0			N18E08	Q	
						N22E62	0	0	0			N22E62	Q	
						N18W03	0	0	0			N18W03	Q	
289	16	15	54	99	11	N05W52	0	0	0		16	N05W52	Q	SOLQUIET MAGALERT
						N18W04	0	0	0			N18W04	Q	
						N22E46	1	0	0			N22E46	Q	
						N18E17	2	0	0			N18E17	Q	
						N23W07	0	0	0			N23W07	Q	

ALERT PERIODS

INTERNATIONAL URSIGRAM AND WORLD DAYS SERVICE

OCTOBER 1977

SUMMARY OF THE GEOALERT WWA MESSAGES

Message serial number	Date of issue	Date of observation	Wolf number	10 cm solar flux	A index	Active Regions				Outstanding events	Forecasts			Alert Situations
						Location Lat-Long	No. of Flares Total	M	X		Date	Location Lat-Long	Desc*	
290	17	16	74	93	12	N19W17	0	0	0		17	N19W17	Q	SOLQUIET MAGALERT 17/19
						N23E34	3	0	0			N23E34	Q	
						N19W32	0	0	0			N19W32	Q	
						N22W21	0	0	0			N22W21	Q	
						N23W05	0	0	0			N23W05	Q	
291	18	17	92	96	12	N19W30	0	0	0		18	N19W30	Q	SOLQUIET MAGALERT 18/19
						N23E20	0	0	0			N23E20	Q	
						N18W45	0	0	0			N18W45	Q	
						N23W29	0	0	0			N23W29	Q	
						N22W18	0	0	0			N22W18	Q	
292	19	18	83	96	19	N19W43	0	0	0		19	N19W43	Q	SOLQUIET MAGALERT 19/20
						N24E05	1	0	0			N24E05	Q	
						N18W59	0	0	0			N18W59	Q	
						N23W31	0	0	0			N23W31	Q	
						S24E32	0	0	0			S24E32	Q	
293	20	19	100	106	24	N19W58	0	0	0		20	N19W58	Q	SOLQUIET MAGALERT 20
						N24W06	1	0	0			N24W06	Q	
						N23W49	0	0	0			N23W49	Q	
						N23W66	0	0	0			N23W66	Q	
						S26E15	4	0	0			S26E15	E	
294	21	20	87	100	07	N19W71	1	0	0		21	N19W71	Q	SOLQUIET MAGNIL
						N24W19	0	0	0			N24W19	Q	
						N23W63	1	0	0			N23W63	Q	
						S25E05	1	0	0			S25E05	Q	
						N23W79	1	0	0			N23W79	Q	
295	22	21	68	102	07	N19W88	0	0	0		22	N19W88	Q	SOLQUIET MAGQUIET STRATWARM ALERT /SATURDAY/ SPRINGTIME TEMPERATURE REVERSAL PROGRESSING OVER ANTARCTIC MID-STRATOSPHERE. GRADUAL WARMING OVER NEXT WEEKS WILL LEAD TO CIRCULATION REVERSAL PROGRESSING DOWNWARD FROM UPPER STRATOSPHERE.
						N22W73	0	0	0			N22W73	Q	
						S25W08	1	0	0			S25W08	Q	
						S27E36	0	0	0			S27E36	Q	
296	23	22	45	95	17	N20W88	2	0	0		23	N20W88	Q	SOLQUIET MAGQUIET
						S25W21	1	0	0			S25W21	Q	
						S27E23	0	0	0			S27E23	Q	
297	24	23	35	90	07	S25W24	0	0	0		24	S25W24	Q	SOLQUIET MAGQUIET
						S26E11	0	0	0			S26E11	Q	
298	25	24	54	89	06	S25W49	0	0	0		25	S25W49	Q	SOLQUIET MAGQUIET
						S27W00	0	0	0			S27W00	Q	
						N22E64	0	0	0			N22E64	Q	
						N18E45	0	0	0			N18E45	Q	
299	26	25	27	89	04	S25W67	0	0	0		26	S25W67	Q	SOLQUIET MAGQUIET
						N22E53	0	0	0			N22E53	Q	
300	27	26	55	90	20	N20E38	1	0	0	SC 26/2330Z	27	N20E38	Q	SOLQUIET MAGALERT 27
						N32E44	0	0	0	19 GAMMA		N32E44	Q	
						S17E26	0	0	0			S17E26	Q	
						S24W79	0	0	0			S24W79	Q	
301	28	27	51	90	38	N21E27	0	0	0		28	N21E27	Q	SOLQUIET MAGALERT MINOR 28/29
						N17E16	0	0	0			N17E16	Q	
						N31E30	0	0	0			N31E30	Q	
						N22E61	1	0	0			N22E61	Q	
302	29	28	52	93	31	N22E12	2	0	0		29	N22E12	Q	SOLQUIET MAGALERT MINOR 29
						N31E16	0	0	0			N31E16	Q	
						N20W58	0	0	0			N20W58	Q	
						S23E70	0	0	0			S23E70	Q	
303	30	29	76	92	08	N21E04	0	0	0		30	N21E04	Q	SOLQUIET MAGNIL
						N31E03	0	0	0			N31E03	Q	
						N19W75	0	0	0			N19W75	Q	
						S24E64	2	0	0			S24E64	Q	
						S19E05	0	0	0			S19E05	Q	
304	31	30	63	96	08	N23W12	1	0	0		31	N23W12	Q	SOLQUIET MAGQUIET
						N32W14	0	0	0			N32W14	Q	
						S23E47	0	0	0			S23E47	Q	
						N19E62	1	0	0			N19E62	Q	
305	1	31	88	97	07	N22W24	0	0	0		1	N22W24	Q	SOLQUIET MAGQUIET
						S19W41	0	0	0			S19W41	Q	
						N30W23	0	0	0			N30W23	Q	
						S24E33	0	0	0			S24E33	Q	
						N19E53	0	0	0			N19E53	Q	

* Q=Quiet E=Eruptive A=Active P=Proton C=Caution D=Doubtful O.G.=Other Groups MF=Major Flare

RELATIVE SUNSPOT NUMBERS

ZURICH, R_z

1976 FINAL | 1977 PROVISIONAL

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1	0	0	28	15	8	7	15	44	42	17	22	45
2	8	0	32	19	8	11	14	43	45	15	29	31
3	0	0	25	19	8	10	22	43	42	24	29	48
4	8	8	22	16	8	7	23	49	39	19	22	45
5	0	0	21	18	8	7	16	48	48	23	21	38
6	0	0	13	7	9	8	16	33	48	26	26	47
7	0	7	0	7	8	7	12	41	25	28	25	54
8	0	19	0	26	28	0	19	38	28	25	18	49
9	0	22	0	21	20	0	25	33	17	30	30	45
10	0	19	0	23	19	0	29	29	23	25	40	36
11	0	22	14	25	19	8	34	27	9	23	45	23
12	8	16	19	48	9	12	35	22	8	29	51	27
13	0	12	23	68	8	16	26	20	10	40	48	53
14	8	32	22	61	7	22	33	25	7	40	47	45
15	7	34	20	45	0	34	26	8	0	42	53	48
16	7	36	18	49	0	33	21	8	0	38	58	53
17	14	34	30	44	0	32	20	8	0	35	53	50
18	20	24	26	37	0	29	12	21	0	40	59	50
19	13	15	7	25	0	22	0	36	7	35	58	46
20	12	8	0	10	0	12	11	21	8	30	58	53
21	8	9	15	9	0	20	14	26	8	32	59	38
22	13	9	24	9	10	19	7	40	23	42	42	35
23	11	9	34	9	8	18	7	57	30	15	41	25
24	10	17	35	8	7	8	7	60	45	19	48	31
25	9	22	17	8	14	0	0	74	38	25	46	25
26	9	25	8	8	8	14	7	71	41	34	49	29
27	8	16	0	0	9	8	13	74	34	38	54	48
28	8	17	13	0	16	16	16	65	26	35	61	39
29	8	19	11		8	9	20	58	16	38	63	39
30	0	19	8		8	8	30	45	8	32	67	43
31		12	18		8		40		7	31		51
MEAN	5.2	15.3	15.7	22.6	8.8	13.2	18.4	38.4	21.2	29.9	44.1	41.3

1976 yearly mean = 12.6

DAILY SOLAR FLUX AT 2800 MHz
OTTAWA ARO

FLUX ADJUSTED TO 1 A.U., S_a

1976 | 1977

DAY	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
1	70.9	70.2	73.8	81.7*	72.6	74.8	77.2	88.9	102.0	83.0*	83.1	93.8*
2	69.1	71.6	76.5	82.1	75.4	76.3	78.5	90.9*	100.7	82.8	84.2	93.2
3	69.8	71.2	76.8	80.9	74.8	76.6	81.9	93.8*	97.4	82.3	87.2	97.4
4	69.9	71.3	75.5	78.7	76.9	76.8	81.4*	94.2	94.0	82.9*	84.2	98.8
5	70.9	70.1	74.8	77.8	77.6	75.5	79.6	90.2*	88.0*	86.4	85.5	104.0*
6	69.7	70.1	72.4	75.2	77.6	76.1	78.5	98.6	90.2	88.2	84.9	103.5
7	69.5	69.7	71.4	74.6	77.2	75.5*	77.1*	92.8	85.2	86.9	89.3	105.5
8	69.3	70.8	69.6	78.6	81.6	74.3	77.9	91.9*	82.1	85.1	91.6	103.8
9	70.7	74.3	68.4	83.1	80.3	74.8	83.6	90.9	79.0	85.9	95.9	100.7
10	69.4	76.8	68.8	83.5	80.5	76.5	88.8	89.2*	76.9	87.2	99.8	96.4
11	70.5	78.3	71.2	84.6	78.9	79.2	88.8	87.2	76.2	87.6	104.6	95.3
12	70.8	78.6	74.9	86.9*	78.6	80.2	79.7	83.3	75.8	86.5	107.8	100.8
13	69.4	78.1	77.5	88.5	77.9	82.7	81.5	84.2	77.8	89.8	112.9	98.5
14	69.2	81.8	74.5	85.2	77.2	83.4	84.8	82.3	76.8	87.5	116.2	98.9
15	71.1	79.8	75.6	84.4	74.8	86.8	85.0	82.3	76.0	86.9	120.7	98.2
16	71.1	77.8	77.5	85.7	74.1	83.7	85.1	81.4	76.9	87.3	120.4	96.8
17	72.8	75.5	76.1	89.6*	74.1	83.6	84.1	82.4	76.5	87.1	120.6	94.9
18	75.6	73.8	75.4	86.5	73.9	80.8	82.9	84.3	76.9	88.6	120.5	95.4
19	74.6*	72.9	76.9	82.8	74.0	79.8*	82.1	85.2	76.9	87.0	104.5	105.0
20	72.9	71.7	75.2	81.1	72.3	80.4*	81.3	88.9	80.1	88.7	108.8	99.6*
21	73.2	71.8	74.0	78.6	72.8	80.8	81.4	92.4	81.7	90.8	104.9*	98.6*
22	73.3	73.4	76.8	75.9	74.6	80.1	82.9	98.8*	83.1	89.6	102.4	93.9
23	72.5	73.7	78.7	75.9	74.7	77.5	82.4	99.4	85.0	86.0	99.3	87.3
24	72.9	74.2	77.4	74.2	74.8	76.5	79.2	107.4	84.0	86.0	100.6	88.3
25	72.7	75.6	74.9	74.3	74.0	76.4	77.4	113.8	86.0	87.7	98.8	88.1
26	72.1	75.6	76.8	72.3	75.1	75.4	76.8	120.7	86.0	86.4	99.4	88.6
27	73.7	75.2	75.3	72.0	74.5	74.9	77.9	115.9*	85.4	85.4	100.0	88.5
28	71.7	74.5	77.1	72.6	74.4	74.2	79.1	113.4	87.5	82.4	100.0	90.3*
29	69.7	74.8	76.1		75.4	74.8	81.7	111.9	86.7	86.1	99.4	90.3
30	69.7	75.1	76.3		74.6	76.6	89.9	108.9	84.1	85.5	97.7	94.9
31		76.4	79.6		74.1		92.0		80.4	84.7		95.9
MEAN	71.3	74.3	74.9	80.3	75.8	78.2	81.4	94.5	83.7	86.4	100.9	96.3

* adjusted for burst

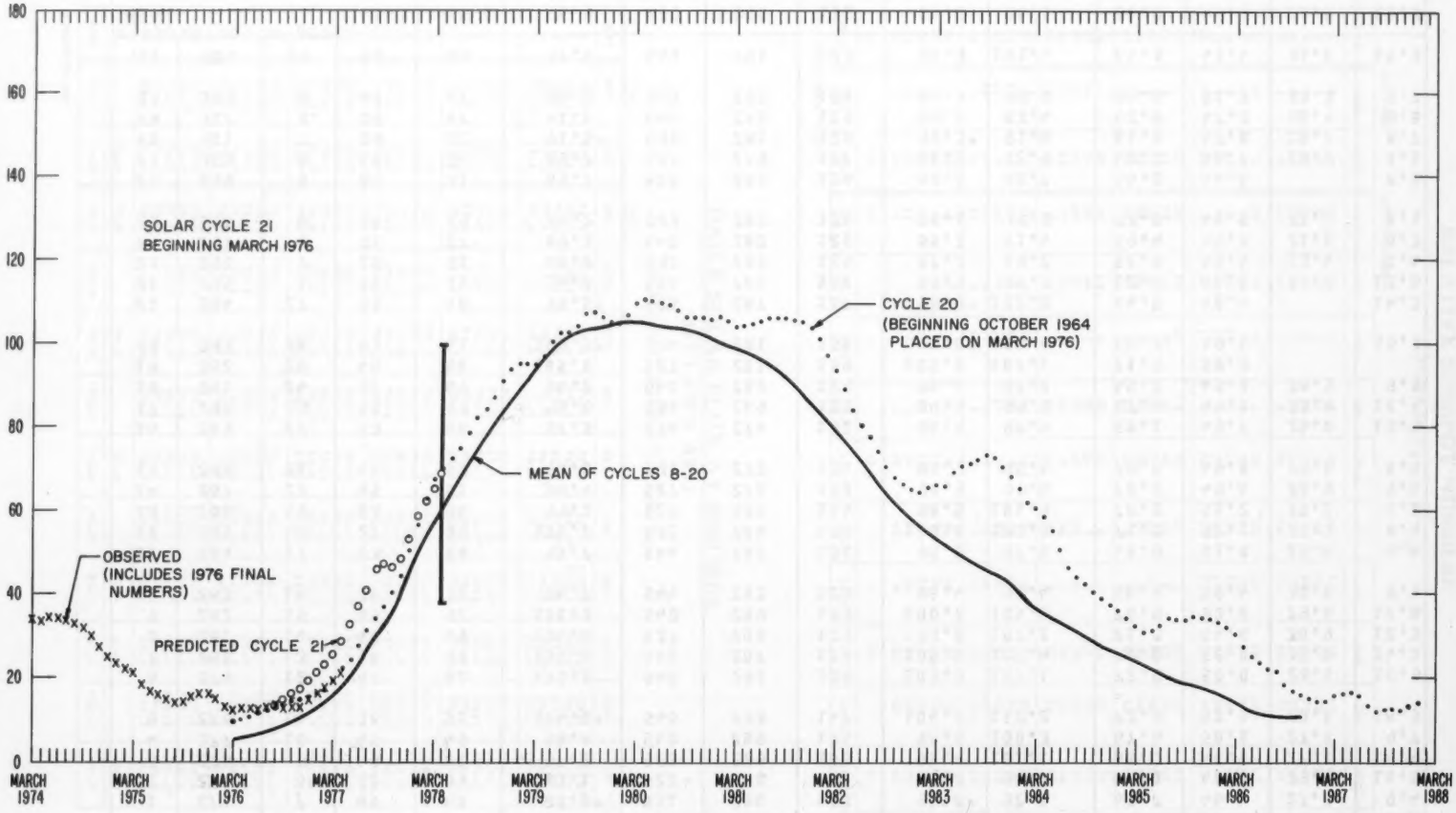
DAILY SOLAR INDICES

OCTOBER 1977

OCT 1977	YEAR DAY	BARTELS 27-DAY CYCLE NUMBER	SUNSPOT NUMBERS		OBSERVED FLUX	SOLAR FLUX ADJUSTED TO 1 A.U.								
			R_Z	$R_{A'}$	OTTAWA 2800	AFGL 15400	AFGL 8800	AFGL 4995	OTTAWA 2800	AFGL 2695	AFGL 1415	AFGL 606	AFGL 410	AFGL 245
1	274	7	45	43	93.6*	531	286	133	93.8*	92.7	63.7	46.4	27.3	9.4
2	275	8	31	39	93.1	523	278	130	93.2	94.5	62.0	46.3	29.7	11.6
3	276	9	48	47	97.3	523	278	133	97.4	101.1	66.0	46.9	27.1	14.9
4	277	10	45	49	98.8	540	289	134	98.8	100.3	67.4	50.1	27.8	9.7
5	278	11	38	51	104.0*	548	298	147	104.0*	112.2	73.3	50.8	20.0	18.5
6	279	12	47	62	103.6	545	290	139	103.5	107.1	72.9	50.0	28.1	10.5
7	280	13	54	63	105.6	542	287	139	105.5	105.4	70.0	52.0	35.6	24.3
8	281	14	49	49	104.0	537	295	139	103.8	107.2	71.3	54.6	30.9	12.3
9	282	15	45	52	101.0	540	289	135	100.7	105.8	70.9	50.2	29.6	10.6
10	283	16	36	38	96.7	544	283	129	96.4	98.4	66.4	50.4	30.6	9.1
11	284	17	23	28	95.7	544	282	131	95.3	97.5	65.9	51.8	25.6	8.6
12	285	18	27	39	101.2	532	284	136	100.8	103.0	71.0	52.1	27.3	8.4
13	286	19	53	54	99.0	525	285	134	98.5	101.9	70.2	51.2	30.0	9.1
14	287	20	45	51	99.4	527	278	130	98.9	99.6	70.2	49.6	28.9	9.1
15	288	21	48	57	98.8	531	272	131	98.2	95.6	70.5	49.8	25.6	8.5
16	289	22	53	56	97.5	536	274	132	96.8	98.9	68.1	49.7	26.8	13.9
17	290	23	50	53	95.6	534	269	129	94.9	95.9	67.6	49.5	33.8	18.4
18	291	24	50	49	96.2	540	280	129	95.4	97.2	65.2	49.8	28.9	9.1
19	292	25	46	60	105.8	527	287	139	105.0	107.1	71.3	50.0		
20	293	26	53	61	100.5*	524	281	136	99.6*	104.6	66.7	49.4		15.3
21	294	27	38	46	99.5*	535	287	137	98.6*	102.2	64.5	48.4		14.3
22	295	1	35	35	94.8	536	282	130	93.9	95.3	62.0	46.6	30.7	13.6
23	296	2	25	31	88.2	532	285	125	87.3	89.2	57.9	45.4	23.4	8.4
24	297	3	31	27	89.3	540	282	126	88.3	91.4	59.4	45.8	21.6	8.3
25	298	4	25	29	89.2	523	282	126	88.1	90.3	57.5	45.5	27.2	8.1
26	299	5	29	31	89.7	525	282	126	88.6	90.7	59.0	44.6		8.1
27	300	6	40	34	89.7	527	279	127	88.5	92.9	60.0	46.7	26.4	8.1
28	301	7	39	32	91.5*	535	281	126	90.3*	91.6	61.4	47.8	26.7	8.7
29	302	8	39	47	91.6	544	280	128	90.3	93.4	63.5	47.2	26.4	9.6
30	303	9	43	47	96.2	543	292	132	94.9	99.0	65.6	51.3	28.3	9.7
31	304	10	51	49	97.4	541	291	133	95.9	101.1	65.8	48.4	31.0	10.3
MEAN			41.3	45.5	96.9	535	283	132	96.3	98.8	66.0	49.9	28.0	11.3

* Adjusted for burst.

Note: Data gaps in AFGL Sagamore Hill are due to equipment problems.



PREDICTED AND OBSERVED SUNSPOT NUMBERS

SMOOTHED OBSERVED AND PREDICTED SUNSPOT NUMBERS
CYCLE 21

MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1976	15.2	13.2	12.2	12.6	12.5	12.2	12.9	13.9	14.1	13.3	13.3	14.7
1977	16.6	17.9	19.8	21.9	25.0	28.4	31.7	35.2	38.8	42.8	47.2	51.6
					(1)	(3)	(5)	(8)	(11)	(14)	(16)	(19)
1978	56.0	60.9	65.5	69.2	72.5	75.6	78.9	82.6	87.1	91.0	94.4	97.7
	(22)	(25)	(28)	(31)	(34)	(37)	(38)	(37)	(37)	(37)	(37)	(39)
1979	100.5	103.0	106.0	109.3	111.7	113.2	114.1	114.6	114.6	114.4	114.5	114.8
	(39)	(40)	(42)	(44)	(45)	(47)	(49)	(51)	(53)	(53)	(53)	(52)
1980	115.4	115.0	113.7	112.4	111.4	110.9	110.6	110.0	109.6	109.5	108.8	107.2
	(52)	(54)	(54)	(54)	(54)	(53)	(53)	(54)	(55)	(57)	(57)	(55)
1981	105.5	104.4	103.3	102.6	102.1	101.4	100.4	98.8	96.8	94.4	91.9	89.5
	(53)	(52)	(50)	(49)	(47)	(46)	(45)	(43)	(41)	(40)	(39)	(38)
1982	87.5	85.4	83.1	80.1	76.8	74.1	71.2	68.8	66.0	62.9	60.7	59.3
	(36)	(34)	(33)	(32)	(30)	(28)	(24)	(23)	(22)	(21)	(21)	(21)
1983	57.8	56.1	54.3	52.9	51.6	50.2	48.9	47.6	46.8	45.8	44.4	42.4
	(22)	(21)	(22)	(23)	(24)	(26)	(27)	(29)	(29)	(29)	(28)	(27)
1984	40.0	38.0	36.7	35.6	34.2	32.8	31.8	30.8	29.5	28.3	27.1	26.1
	(27)	(28)	(30)	(30)	(30)	(29)	(27)	(26)	(26)	(25)	(25)	(25)
1985	25.4	24.6	23.7	22.8	21.8	21.0	20.1	19.1	18.4	18.2	17.7	17.0
	(25)	(24)	(23)	(22)	(21)	(21)	(22)	(22)	(23)	(23)	(23)	(22)
1986	16.1	15.1	14.1	13.2	12.5	12.0	11.7	11.5	11.3	11.1	11.2	11.6
	(21)	(20)	(19)	(18)	(17)	(16)	(15)	(14)	(12)	(11)	(11)	(11)
1987	12.1	12.7	13.3	14.0	14.8							
	(11)	(12)	(13)	(14)	(15)							

For each month, the upper figure is the observed or predicted Zürich smoothed sunspot number. The lower figure in parenthesis is the corresponding absolute value of the 90% prediction interval, an indication of the uncertainty above and below the predicted number. Observed numbers are those with no prediction intervals. The observed smoothed sunspot numbers are based on final Zürich numbers through 1976.

The predicted sunspot numbers are derived from a regression analysis based on cycles 8 through 20. Tests indicate that earlier cycles are from a different statistical population.

The table above assumes March 1976 as the minimum of solar cycle 20. The Office of Telecommunications is preparing similar predictions, using June 1976 as the observed minimum. Until the 1977 Zürich final relative sunspot numbers are available, either March or June 1976 is possible as the observed sunspot minimum.

Hα SOLAR FLARES

OCTOBER 1977

OBSERV-ATORY	OBSERVED UT				LOCATION					DURA-TION	IM-POR-TANCE	OBS.		MEASUREMENTS			REMARKS
	DATE OCT	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME — UT	MEAS. AREA Millionths of Disk	CORR. AREA Sq. Deg.	
PALE	02	2132E	2132U	2137D	N13	W19	.456		1.5	5D	SF	3	V		37		DE H
RAMY	02	2136E	2136U	2143D	N15	W17	.459		1.6	7D	SN	3	C		40		
MONT	03	0913	0915	0924	N31	W19	.664		2.0	11	SF		C	0915	40		E
MONT	03	0921	0929	0946	N33	W19	.687		2.0	25	SN		C	0929	80		E
MONT	03	0931	0933	0936	N18	W25	.570		1.5	5	SF		C	0933	40		D
MONT	03	1014	1035	1045D	N14	W23	.510		1.7	31D	SN		C	1035	110		
MCMA	03	1158E		1245D	N33	W18	.682	14967	2.1	47D	SN		C	1212	80	1.0	E
MCMA	03	1710		1730D	N13	W30	.582	14963	1.5	20D	SF		P	1717	40	.5	EL
MCMA	03	1717E		1718D	N32	W23	.698	14967	2.0	1D	SN		P	1717	40	.5	E
PALE	03	2323	2325	2335	N13	W30	.582		1.7	12	SN	3	C		93		FDE
PALE	03	2356	2357	0006	N13	W31	.594		1.7	1D	SF	3	C		55		F
BUCA	04	0800	0806	0820	N33	W28	.737		2.2	20	SF		C	0806	120	1.7	CE
MCMA	04	1606	1614	1625	N34	W34	.784	14967	2.1	19	SN		C	1614	80	1.1	E
MCMA	04	1823		1930D	N34	W37	.803	14967	2.0	67D	SF		C	1844	70	1.0	EK
BUCA	05	0745		0805	N31	W46	.845		1.9	20	SN		C	0745	53	.8	CD
RAMY	05	1323E	1326	1334D	N 9	E90	1.000		12.3	11D	SN	4	C		0		FDE
RAMY	05	1335E	1337	1354	N15	W54	.844		1.5	19D	SN	4	C		80		FDE
PALE	05	1713	1715	1722D	N30	W50	.867		2.0	9D	SF	3	C		42		DE
MITK	06	0027	0031	0039	N30	W55	.898		1.9	12	SN		C	0031	100	1.9	E
MITK	06	0248	0251	0258	N30	W57	.910		1.8	10	SF		C	0251	60	1.2	E
MITK	06	0427	0432	0457	N30	W58	.916	14967	1.8	30	1N		C	0432	140	2.9	EH
MITK	06	0459	0502	0517	N33	W58	.924	14967	1.9	18	1N		C	0502	190	4.0	E
BUCA	06	0801	0805	0829	N07	E80	.987		12.3	28	SB		C	0805	64		E
TEHR	06	0805E	0809	0831	N 6	E82	.992		12.5	26D	SF	3	C		95		
BUCA	06	0940		0945	N09	E85	.998		12.8	5	SF		C	0941	43		D
TEHR	06	1055	1101	1113	N 7	E80	.987		12.5	18	SF	3	C		127		
MCMA	06	1215E	1223	1405D	N32	W62	.941	14967	1.9	110D	SN		C	1223	75	1.5	EK
MCMA	06	1406	1437	1547D	N32	W64	.950	14967	1.8	101D	SN		C	1437	80	1.9	EHK
MCMA	06	1406	1413	1547	N32	W64	.950	14967	1.8	101	SN		C	1413	50	1.4	
MCMA	06	1548	1552	1604D	N32	W64	.950	14967	1.9	16D	SN		C	1552	60	1.5	E
MCMA	06	1420	1423	1508	N05	E74	.965	14979	12.1	48	SN		C	1423	40	1.5	E
MCMA	06	1605	1608	1700D	N32	W65	.954	14967	1.8	55D	1B		C	1608	90	2.2	E
PALE	06	1821	1826	1837	N29	W64	.945		2.0	16	SN	3	C		79		FDE
PALE	06	1946	1950	2001	N29	W66	.954		1.9	15	SB	3	C		119		FDE
MITK	07	0130E	0139	0148	N20	W25	.587		5.2	18D	SN		C	0139	100	1.2	E
MONT	07	0803E	0806	0814	N06	E67	.927		12.4	11D	SF		C	0806	20		D
MONT	07	0813	0816	0819	N12	E65	.921		12.2	6	SF		C	0815	20		
MONT	07	0815	0822	0829	N07	E69	.940		12.5	14	SF		C	0822	40		E
MONT	07	0855	0859	0904	S34	E13	.504		8.3	9	SF		C	0859	20		D
MONT	07	1015	1021	1025	N29	W78	.992		1.6	10	SF		C	1021	40		D
MONT	07	1134	1135	1136	N12	E64	.915		12.3	2	SF		C	1135	20		D
MONT	07	1137	1141	1156	N06	E65	.914		12.4	19	SF		C	1141	20		D
MCMA	07	1253	1313	1430D	N03	E58	.854	14979	11.9	97D	SN		C	1313	40	.8	EH
MCMA	07	1425	1428	1434	N18	W88	1.000	14963	1.8	9	SF		C	1428			D
MCMA	07	1548	1550	1559	N05	E62	.890	14979	12.3	11	SN		C	1550	60	1.3	DH
PALE	07	1752	1756	1839	N 7	E56	.843		11.9	47	SF	3	V		43		FDE
PALE	07	2223E	2223U	2224D	N 6	E57	.850	14979	12.2	1D	1N	3	V		153		FDE
PALE	08	0055E	0105	0127	N 7	E52	.804		11.9	32D	SF	3	V		49		FDE
PALE	08	0055E	0126	0127	N 7	E52	.804		11.9	32D	SF	3	V		22		FDE
PALE	08	0231	0232	0300D	N 6	E55	.831		12.2	29D	SN	3	V		63		FDE
PALE	08	0231	0255	0300D	N 6	E55	.831		12.2	29D	SN	3	V		98		FDE
TEHR	08	0235	0242	0326	N 8	E43	.709		11.3	51	SN	3	C		160		U S
MONT	08	1217	1241	1315D	N05	E43	.699		11.7	58D	1N		C	1241	250		F
TEHR	08	1235	1242	1326	N 8	E43	.709		11.7	51	SN	2	C		190		U S
PALE	08	2050E	2051	2053	N 7	E43	.705		12.1	3D	SF	3	V		80		FDE
MCMA	10	2040E		2100D	N06	E10	.269	14979	11.6	20D	SN		P	2042	100	1.0	E
PALE	11	2301E	2301U	2309	N 6	E 2	.218		12.1	8D	SB	3	V		89		DE H
PALE	11	2301E	2301U	2309	N14	E 2	.342		12.1	8D	SB	3	C		89		DE H
PALE	12	0033	0039	0042	N 6	E 1	.206		12.1	9	SF	3	V		38		FDE
MITK	12	0155E		0202D	N04	E02	.175	14979	12.2	7D	1N		P	0155	390	4.0	
PALE	12	0209E	0209U	0210D	N 6	W 2	.208		11.9	1D	SN	3	V		65		FDE
MONT	12	0803E	0803	0807	N22	E90	1.001		19.1	4D	SF		C	0803	40		
MONT	12	0943	0952	1004	N06	W03	.212		12.2	21	SN		C	0952	60		E

Hα SOLAR FLARES

OCTOBER 1977

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE OCT	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	MCMATH PLAGE REGION	CMP DAY	MIN.		CORD.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
WEND	12	0952		1001	N08	W01	.240		12.3	9	SN						
MONT	12	1211	1214	1225D	N06	W04	.217		12.2	14D	SF		C	1214	40		E
WEND	12	1435		1451	N07	W03	.228		12.4	16	SF						
PALE	13	0109	0110	0124	N 5	W14	.303		12.0	15	SF	3	V		45		FDE
PALE	13	0109	0110	0124	N 5	W14	.303		12.0	15	SF	3	C		45		FDE
MONT	13	0747	0750	0753	N08	W18	.385		12.0	6	SF		C	0750	20		DH
MONT	13	1034	1036	1044	N22	E79	.990		19.4	10	SN		C	1036	40		
MCMA	13	1706		1820	N05	W20	.386	14979	12.2	74	SB		P	1715	100	1.1	E
PALE	13	1711	1712	1753	N 5	W23	.428		12.0	42	SN	3	C		99		FDE
PALE	13	1711	1712	1728D	N 5	W23	.428		12.0	17D	SN	3	V		99		FDE
PALE	13	1711	1712	1753	N 5	W23	.428		12.0	42	SN	3	V		99		FDE
MCMA	13	1844	1850	1927	N30	W14	.619	14990	12.7	43	SB		C	1850	100	1.1	EU
PALE	13	1845	1850	1955	N29	W14	.606		12.7	70	SN	3	C		135		FDE
PALE	13	1845	1850	1955	N29	W14	.606		12.7	70	SN	3	V		135		FDE
PALE	13	2226	2228	2236	N 5	W26	.471		12.0	10	SN	3	V		77		FDE
PALE	14	0123	0125	0150	N 5	W27	.485		12.0	27	SN	3	V		114		FDE
PALE	14	0309	0310	0319	N 5	W28	.499		12.0	10	SN	3	V		68		FDE
BUCA	14	0605		0627	N08	W28	.517		12.2	22	SF		C	0610	86	1.0	D
MONT	14	0804	0807	0831	N07	W30	.538		12.1	27	SN		C	0807	80		
MONT	14	0947	1059	1105	N07	W31	.551		12.1	78	SN		C	1059	80		FK
MONT	15	1018	1022	1029	N18	W10	.432		14.7	11	SF		C	1022	40		E
MONT	18	0808	0811	0818	N25	W23	.612		16.6	10	SF		C	0811	40		E
MCMA	18	1541	1554	1700	S26	E04	.358	14995	19.0	79	1B						
MCMA	18	1749E		1818D	N26	E16	.574	14991	19.9	29D	SN		C	1754	50	.6	E
MITK	19	0217	0218	0226	N21	W35	.685		16.5	9	SF		C	0218	50	.7	E
BUCA	19	0720		0745	S25	E29	.560		21.5	25	SN		C	0725	43	.6	D
PALE	19	2219E	2242	2258	S26	E15	.426		21.1	39D	SN	3	V		137		
PALE	20	0032E	0036	0058	N24	W44	.787		16.7	26D	SF	3	V		32		DE
MITK	20	0617	0629	0644	N22	W52	.845		16.4	27	SN		C	0629	50	.8	D
MCMA	20	1541	1605	1700	S26	E04	.361	14995	21.0	79	1B		C	1554	225	2.7	KLU
MONT	21	0813	0834	0933	S24	W04	.330		21.0	80	SN		C	0834	80		E
MONT	21	0948	0951	1009	S26	W07	.373		20.9	21	SF		C	0951	20		D
MONT	21	1239	1244	1248	S27	W06	.384		21.1	9	SF		C	1244	40		E
MCMA	21	1505	1508	1520	S25	W09	.369	14995	21.0	15	SN		C	1508	45	.5	E
MCMA	21	1536	1555	1640	S26	W09	.384	14995	21.0	64	SN		C	1555	75	.9	EL
PALE	21	2127E	2143U	2148D	N29	W14	.597		20.8	21D	SN	3	V		39		DE Z
PALE	21	2127E	2143U	2148D	N29	W14	.597		20.8	21D	SN	3	C		39		DE
MITK	22	0052	0055	0105	N23	W77	.985		16.3	13	SN		C	0055	50		D
MITK	22	0407	0412	0422	N22	W79	.990	14984	16.2	15	1B		C	0412	130		
MITK	22	0517	0518	0537	N26	W32	.693		19.8	20	SN		C	0518	60	.8	EG
BUCA	22	0850		0912	N22	W80	.992		16.4	22	SN		C	0856	64		E
MONT	22	0850	0853	0900D	N23	W79	.990		16.4	10D	1N		C	0853	220		
MONT	22	1048	1052	1100	S26	W19	.465		21.0	12	SN		C	1052	80		E
MITK	23	2336	2338	2346	N18	E63	.915		28.7	10	SN		C	2338	50	1.1	DG
MCMA	24	1428	1433	1500	S25	W44	.728	14995	21.3	32	SN		C	1433	45	.8	E
MCMA	24	1535	1537	1550	S25	W44	.728	14995	21.3	15	SF		C	1537	20	.3	D
MCMA	24	1650	1653	1707	S25	W44	.728	14995	21.4	17	SF		C	1653	15	.2	D
PALE	26	1934E		1941	N21	E44	.768		30.1	7D	SF	3	V		31		F
PALE	26	1934E		1941	N21	E44	.768		30.1	7D	SF	3	C		31		F
MITK	27	0209	0212	0231	N21	E43	.758		30.3	22	SN		C	0212	80	1.1	DG
MITK	27	0507	0517	0530	N19	W33	.645		24.7	23	SN		C	0517	60	.8	DG
PALE	27	2338	2338	2341	N22	E61	.908		2.6	3	SF	3	V		19		DE
PALE	28	0042	0046	0058	N21	E24	.569		29.8	16	SN	3	V		101		FDE
RAMY	28	1205	1218	1245D	S21	E80	.982		4.5	40D	SB	4	C		0		DE H
RAMY	28	1205	1225	1245D	S21	E80	.982	15016	4.5	40D	1N	4	C		0		DE H
MITK	29	0204	0208	0220	S23	E70	.939	15016	4.3	16	1N		C	0208	80		
MITK	29	0358	0407	0412D	S23	E69	.933	15016	4.3	14D	1N		C	0407	80		
MONT	29	0820E	0820	1012	N20	E90	1.000		6.1	112D	SF		C	0820	20		D

Hα SOLAR FLARES

OCTOBER 1977

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE OCT	START	MAX. PHASE	END	APPROX. LAT.	APPROX. MER. DIST.	CENTRAL DISTANCE	HOMATH PLAGE REGION	CMP DAY	MIN.		COND.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR. AREA Sq. Deg.	
WEND	29	0914		0928	S22	E62	.887		4.0	14	SN						
PALE	29	2009E	2009	2021	S23	E63	.895		4.6	120	SN	3	C		84		FDE
PALE	29	2045	2049	2058	S23	E63	.895		4.6	13	SN	3	C		67		FDE
PALE	30	0223	0225	0230	N21	W 1	.428		30.0	7	SF	3	V		57		F
PALE	30	0223	0225	0230	N21	W 1	.428		30.0	7	SF	3	C		57		F
PALE	30	1733	1734	1738	N19	E69	.950		5.9	5	SF	3	C		46		HDE
MITK	31	0132	0142	0221	N17	W90	1.000	15015	24.3	49	1N		C	0142	60		G
MITK	31	0411	0417	0430	N20	E70	.955		6.4	19	SN		C	0417	80		H
MITK	31	0437	0440	0456	S28	W90	.999	15005	24.4	19	1N		C	0440	90		G

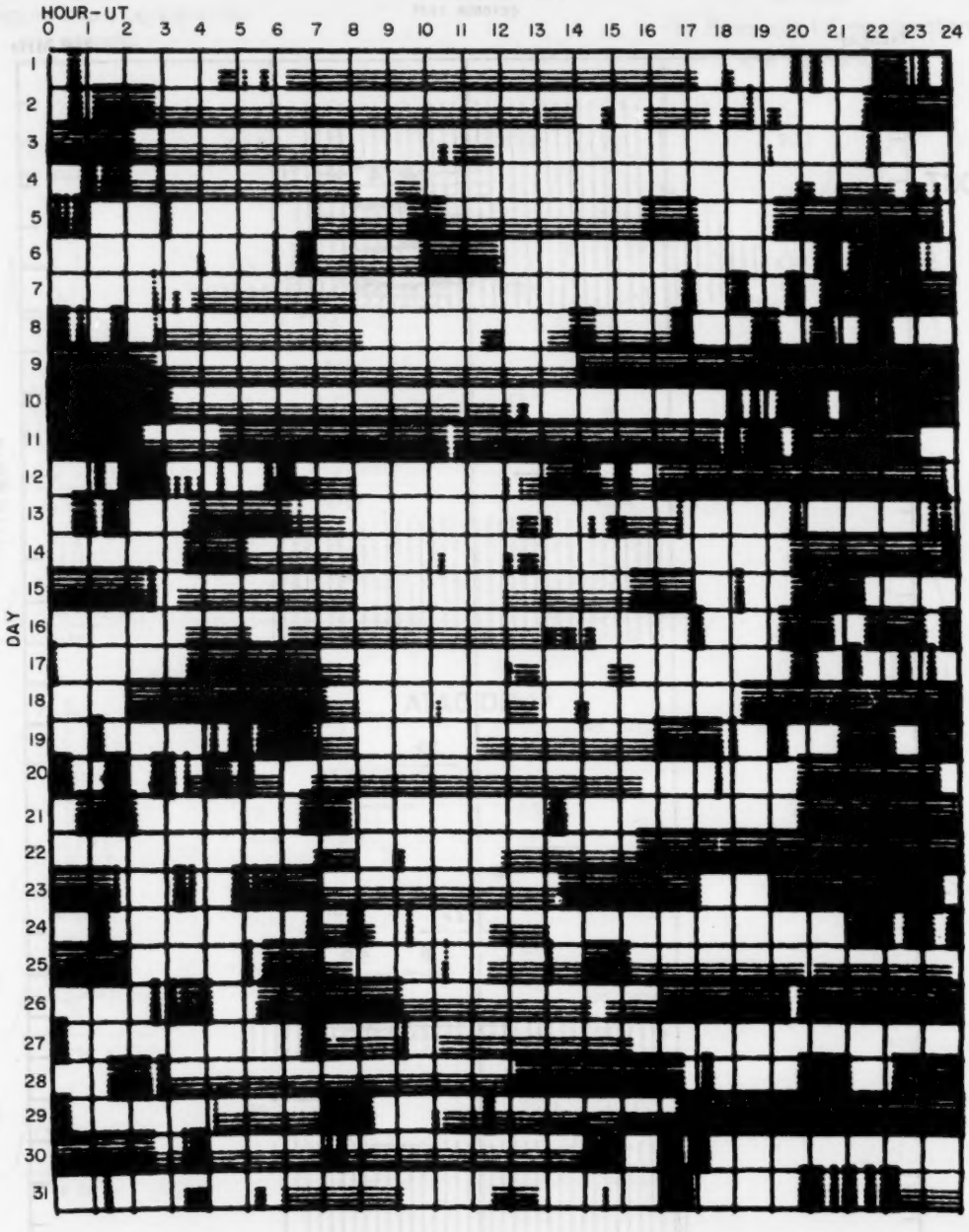
"Remarks":

A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by a high speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the calcium II lines H and K.
P = Flare shows helium D_3 in emission.
Q = Flare shows the Balmer continuum in emission.
R = Marked asymmetry in Hα line suggests ejection of high velocity material.
S = Brightness follows disappearance of filament (same position).
T = Region active all day.
U = Two bright branches, parallel (||) or converging (Y).
V = Occurrence of an explosive phase: important and abrupt expansion in about a minute with or without important intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide Hα line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

OCTOBER 1977



Observatories included in total patrol:

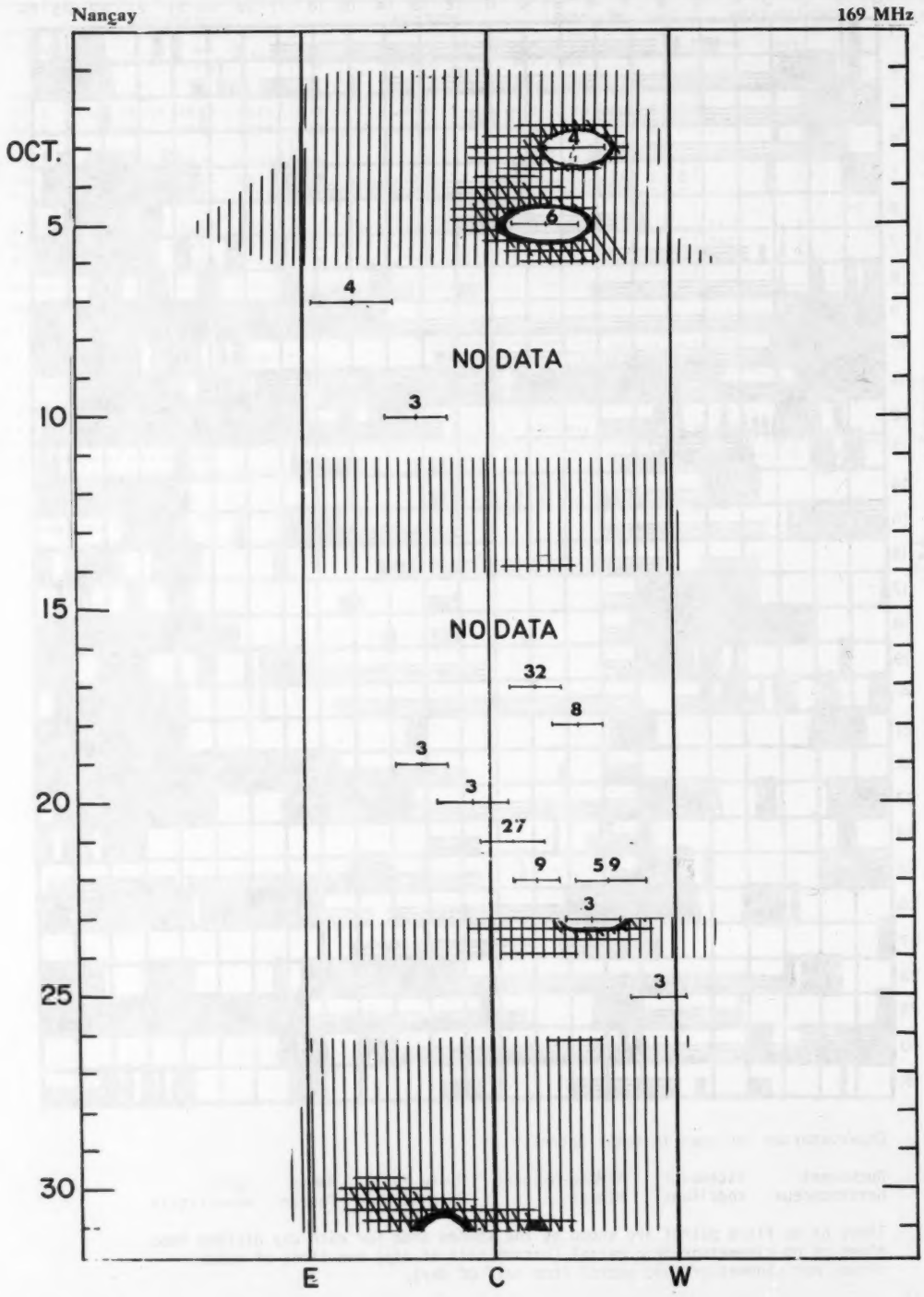
Bucharest	Istanboul	McMath-Hulbert	Monte Mario	Ramey	Upice
Herstmonceux	Kodaikanal	Mitaka	Palehua	Tehran	Wendelstein

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

14
Oct 77

SOLAR RADIO EMISSION
INTERFEROMETRIC OBSERVATION

OCTOBER 1977

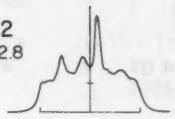
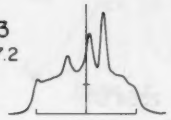
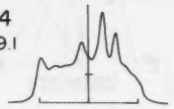
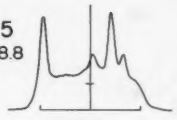
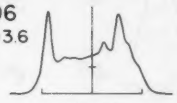
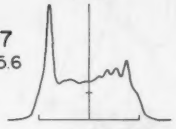
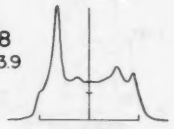
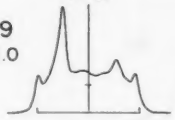
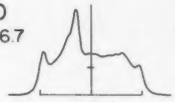
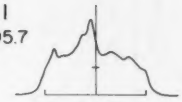
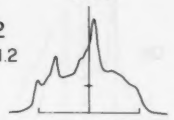
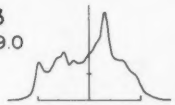
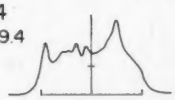
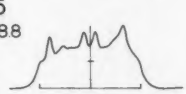
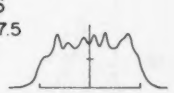
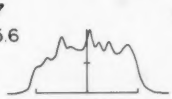
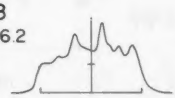
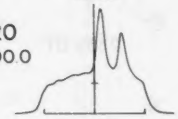
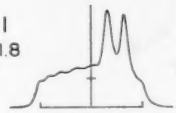
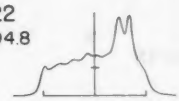
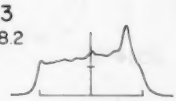
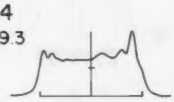
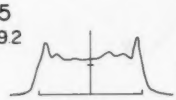
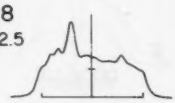
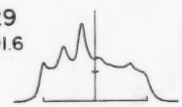
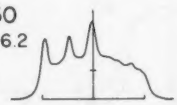
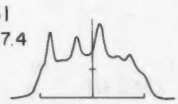
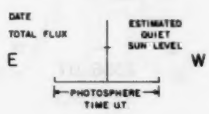


EAST-WEST SOLAR SCANS

OCTOBER 1977

ALGONQUIN RADIO OBSERVATORY
CANADA

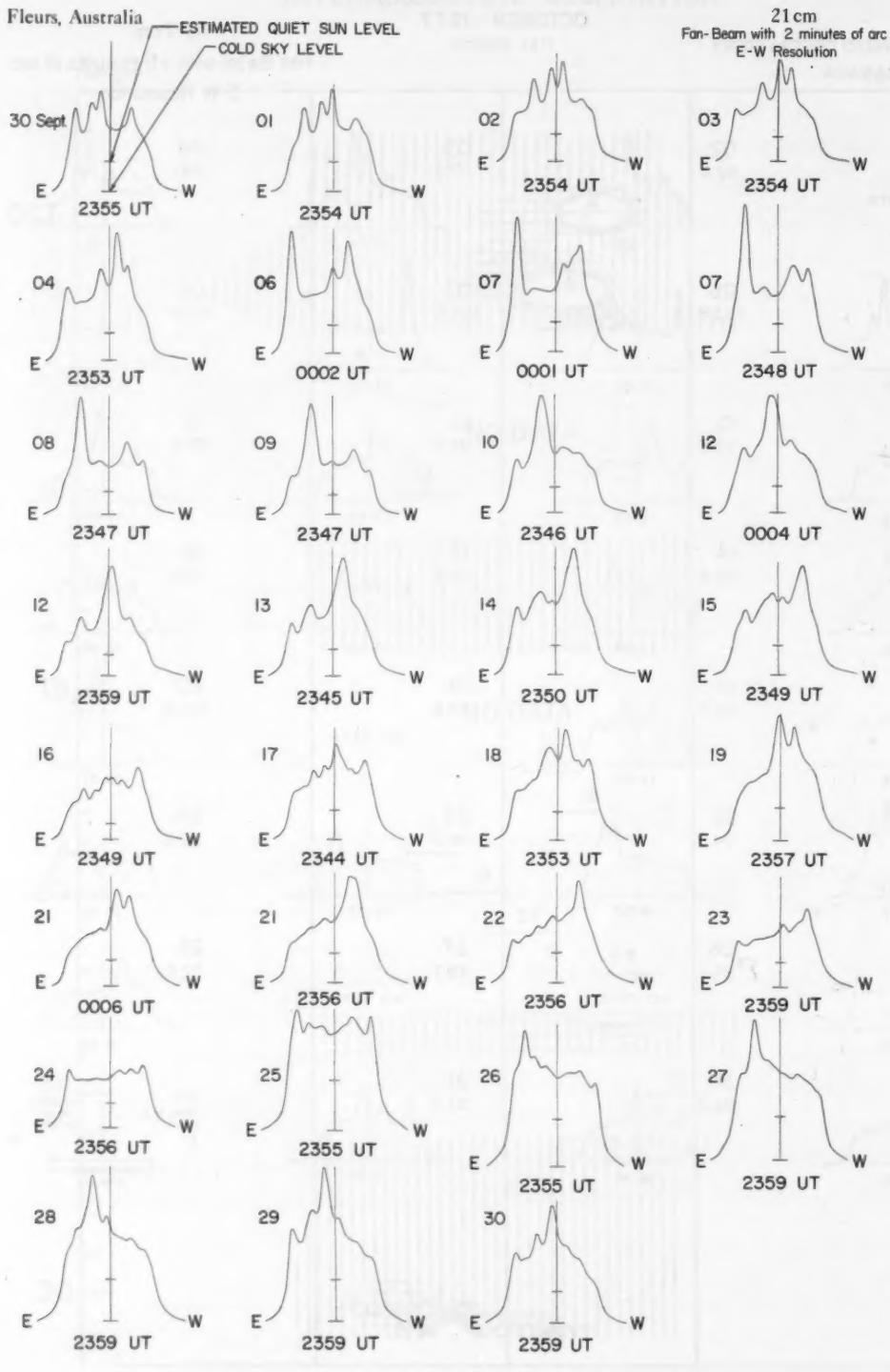
10·7cm
Fan Beam with 1·5 minutes of arc
E-W Resolution

01 94.5 NO DATA	02 92.8  17:02	03 97.2  17:01	04 99.1  17:01
05 108.8  17:01	06 103.6  17:00	07 105.6  17:00	08 103.9  17:00
09 101.0  16:59	10 96.7  16:59	11 95.7  16:59	12 101.2  16:59
13 99.0  16:58	14 99.4  16:58	15 98.8  16:58	16 97.5  16:58
17 95.6  16:58	18 96.2  16:57	19 105.8 NO DATA	20 100.0  16:57
21 101.8  16:57	22 94.8  16:57	23 88.2  16:57	24 89.3  16:56
25 89.2  16:56	26 89.7 NO DATA	27 89.7 NO DATA	28 92.5  16:56
29 91.6  16:56	30 96.2  16:56	31 97.4  16:56	

16
Oct 77

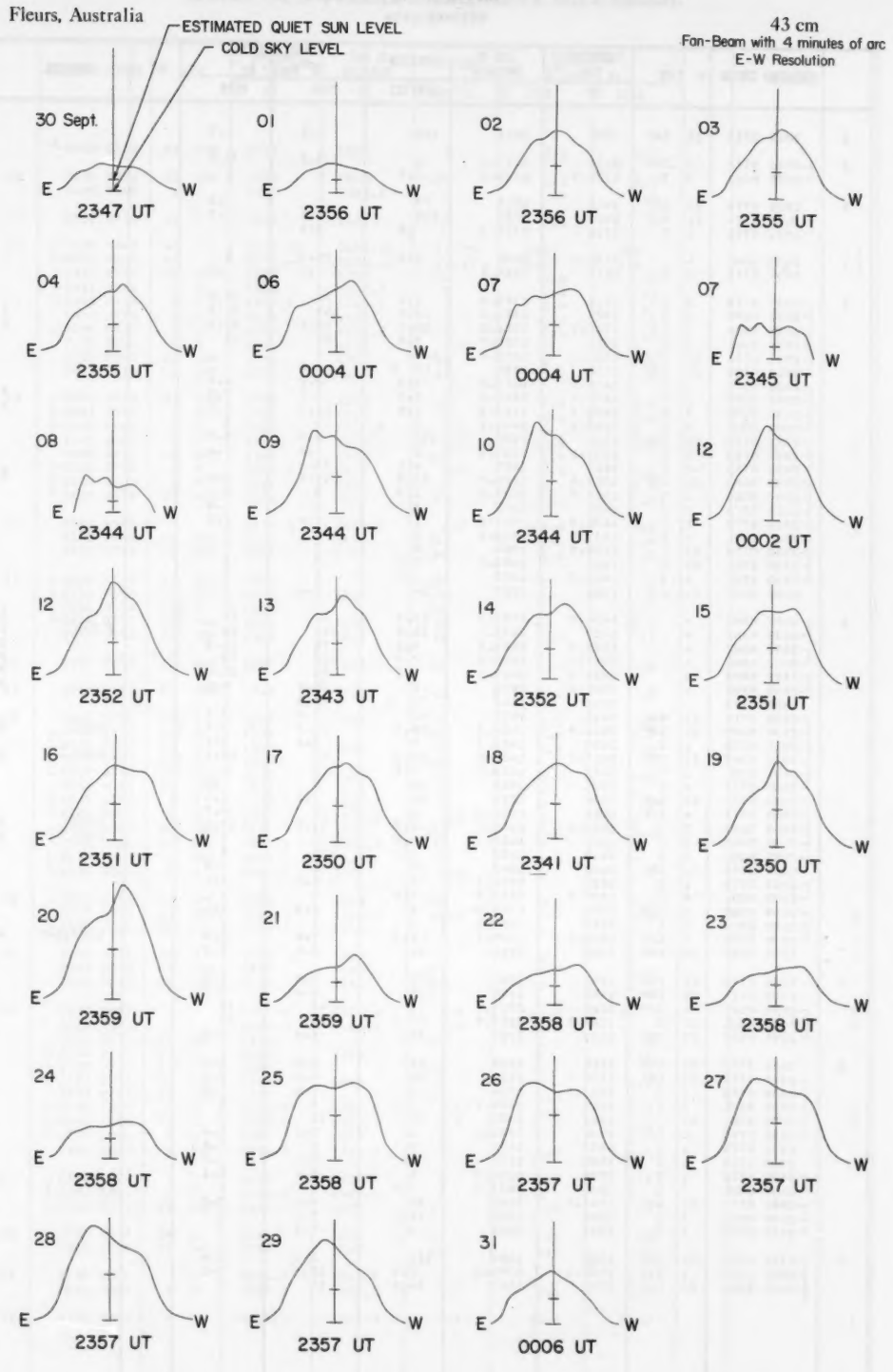
EAST-WEST SOLAR SCANS

OCTOBER 1977



EAST-WEST SOLAR SCANS

OCTOBER 1977



SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS
OCTOBER 1977

	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	REMARKS
1	2800	OTTA	20 GRF	1500	1600	160	1.8	.9		
2	2800	OTTA	2 S/F	2128	2129.5	6	3.2	1.6		
	2695	BCUL	3 S	2129.5	2130.5	2.5	4	1		
3	2800	OTTA	20 GRF	1440	1515	70	1	.5		
	2600	OTTA	21 GRF	1615	1725	105	1.4	.7		
	2800	OTTA	8 S	1716	1716.2	.5	3.6			
4	2695	MANI	4	0432.4	0435	3.6	14.9	6		1
	2800	OTTA	1 S	1613	1614.5	7	.8	.4		
5	2800	OTTA	3 S	1320	1321.1	2.5	77	19.2		
	8830	SGMR	3 S	1320	1321.1	19.6	149	44.7		2
	2695	SGMR	3 S	1320.5	1321.2	18.3	73.1	21.9		2
	2695	BCUL	8 S	1321	1322.5	3.5	54	18		
	2800	OTTA	30 PBI	1322.5	1322.5	100	7			
	2830	OTTA	22 GRF	1332	1334	12 D	4.6			
	2800	OTTA	1 S	1446.5	1447.2	2.5	8.2	4.1		
	8800	SGMR	1 S	1446.8	1447.6	5.3	9.7	3.9		3
	2695	SGMR	3 S	1446.8	1447.8	6.5	11.3	4.5		3
	2695	BCUL	3 S	1447.5	1448.5	2	9	3		
	2800	OTTA	21 GRF	1530	1625	190	5.8	2.9		
	2800	OTTA	1 S	1533.1	1533.9	2	.8	.4		
	2800	OTTA	40 F	1603	1607	4.1	13.4			
	2695	SGMR	22 GRF	1603.4	1606.9	13.5	11.5	4.6		5
	2695	BCUL	8 S	1606.5	1607.5	1.5	9	3		
	2800	OTTA	1 S	1614	1615	2	1	.5		
	2800	OTTA	1 S	1656.8	1657.2	2	2.4	1.1		
	2695	BCUL	1 S	1657.5	1658.5	2	4	1		
	2800	OTTA	40 F	1759.5	1804	6	3			
	2695	BCUL	45 C	1800	1802.5	2.5	3	1		
	2695	BCUL	1 S	1804.5	1805	1.5	4	1		
	2695	PENT	240 R	2206	2220	14	2.6	1.3		
6	2695	MANI	4	0424.8	0432.7	19.4	90	26		1
	8830	MANI	4	0426	0432.7	16.8	166	54		2 SPA 1
	2695	MANI	4	0500.9	0504.8	9.1	74	20.8		2
	8800	MANI	4	0502.1	0504.5	7.9	172	70		2
	8800	MANI	4	0804.8	0806.1	2.2	59	26.8		3
	2695	MANI	4	0804.8	0806	2	20.8	6.5		3
	2800	OTTA		1140	1142	70 D	17.8			
	2800	OTTA	21 GRF	1418	1430	80	7.8	3.2		
	2695	SGMR	20 GRF	1418.8	1421.6	20.5	11.2	3.4		CONT 2
	2800	OTTA	1 S	1419	1421.9	5	7.6	3.4		
	8800	SGMR	20 GRF	1419.2	1421.6	19.3	52	15.6		CONT 2
	2695	BCUL	3 S	1422	1422.5	2.5	6	2		
	2800	OTTA	1 S	1520	1523	10	2	.6		
	2800	OTTA	23 GRF	1545	1557	40	3.2	1.6		
	2800	OTTA	4 S/F	1604	1605.9	3	30	6.7		
	8800	SGMR	3 S	1604.6	1605.7	4.9	58.2	17.5		CONT 3
	2695	SGMR	3 S	1605	1605.8	4.8	30.1	9		CONT 3
	2695	BCUL	8 S	1606	1607	2.5	24	8		
	2800	OTTA	20 GRF	1640	1648	25	1	.5		
	2800	OTTA	1 S	1825	1826.5	5	4.6	1.1		
	2695	BCUL	8 S	1826.5	1827.5	3.5	4	1		
	2695	PENT	2 S/F	1949	1949.9	3	6.8	3.4		
	2695	BCUL	3 S	1949	1950.5	3	7	2		
	2695	SGMR	2 S/F	1949.2	1949.7	2.3	7.6	2.3		CONT,SWF 4
	2695	PENT	20 GRF	2000	2010	20	2.6	1.3		
7	2800	OTTA	20 GRF	1245	1345	175	3.6	1.8		
	2830	OTTA	20 GRF	1730	1805	135	4.4	2.3		
	2695	PENT	4 S/F	2208	2209.1	12	48	12		
	2695	BCUL	45 C	2208.5	2209.5	45.5	34	15		
	2695	PENT	29 PBI	2220	2220	30	5.6	2.6		
8	2800	OTTA	23 GRF	1215	1245	80	8.8	4.4		
	2800	OTTA	21 GRF	1528	1537	30	5.2	2.2		
	2800	OTTA	1 S	1523.5	1524	1	1.6	.8		
	2695	BCUL	8 S	1524	1524.5	1.5	4	1		
	2695	BCUL	45 C	1528	1531	21	10	3		
	2800	OTTA	2 S/F	1530	1530.2	4	5.2	1.8		
	2800	OTTA	1 S	1557	1602	9	1	.5		
	2800	OTTA	1 S	1836	1837	6	1.4	.8		
	2800	OTTA	1 S	2034	2034.5	6	4.4	1.1		
	2695	BCUL	8 S	2035	2035.5	2.5	4	1		
	2800	OTTA	21 GRF	2043.5	2045	36	4.4	2.2		
	2695	BCUL	3 S	2045	2051	14.5	9	3		
	2800	OTTA	1 S	2047	2050	9	5.2	2		
9	2800	OTTA	21 GRF	1550	1605	120	7.2	2.4		
	2800	OTTA	4 S/F	1550.1	1551.1	2.9	10.4	5.2		
	2695	BCUL	23 GRF	1551	1552	34.5	14	5		

SOLAR RADIO EMISSION
SELECTED FIXED FREQUENCY EVENTS

OCTOBER 1977

	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	REMARKS	
				UT	UT	MINUTES	PEAK	MEAN			
	2800	OTTA	29 PBI	1553	1553	8	3.4	1.7			
10	2800	OTTA	20 GRF	1956	2008	100	4.2	1.8			
	2695	PENT	1 S	2203	2203.1	1	.8	.4			
11	2800	OTTA	40 F	1431	1432	9	5.4				
12	2695	MANI	47	0151.3E	0151.6U	11.70	610	154			1
	8800	MANI	47	0151.4E	0152.6U	21.10	1190	310		3 SPA	1
	2800	OTTA	21 GRF	1305	1320	30	1.4	.7			
	2800	OTTA	1 S	1312	1312.7	2	1.2	.6			
	2800	OTTA	1 S	1317.5	1318.1	2	1.4	.7			
	2800	OTTA	1 S	1436	1438	3	1.2	.6			
	2695	PENT	1 S	1700	1701.5	8	1.6	.8			
	2695	BCUL	1 S	1701.5	1703	3.5	2	1			
	2695	PENT	20 GRF	1710	1715	50	1	.5			
	2800	OTTA	20 GRF	1835	1850	40	1.4	.7			
13	2800	OTTA	21 GRF	1710	1725	80	2.8	1.4			
	2800	OTTA	1 S	1711	1712	3	9.4	3.2			
	2695	BCUL	8 S	1711	1712.5	4.5	9	3			
	2695	SGMR	3 S	1711.4	1712.1	1.8	10.8	3.2		SWF	1
	2800	OTTA	20 GRF	1844	1930	100	1.4				
	2800	OTTA	1 S	2226.5	2227	1.5	3.6	1.8			
	2695	BCUL	1 S	2227	2228	2	4	1			
	2800	OTTA	29 PBI	2228	2228	35	1.2	.6			
14	2695	MANI	3	0124.3	0124.7	2.7	12.6	3.2			1
	2800	OTTA	20 GRF	1600	1634	100	1.6	.8			
	2800	OTTA	20 GRF	1910	1917	40	1.4	.7			
15	2800	OTTA	27 RF	1550		100	1	.8			
	2800	OTTA	24 R	1550	1610	20	1	.5			
	2800	OTTA	24P R	1610		50	1				
	2800	OTTA	26 FAL	1700	1730	30	-1	-0.5			
	2800	OTTA	20 GRF	1920	1927	20	1.4	.7			
16	2695	PENT	20 GRF	2015	2020	45	1.4	.9			
18	2800	OTTA	20 GRF	1740	1800	45	1.2	.6			
19	2800	OTTA	240 R	1310	1325	15	1.8	.9			
	2800	OTTA	27F RF	1340		287	1.8	1.6			
	2800	OTTA	24 R	1340	1352	12	1.8	.9			
	2800	OTTA	24P R	1352		248	1.8				
	2800	OTTA	26 FAL	1800	1827	27	-1.8	-.9			
	2800	OTTA	21 GRF	1830	1840	20	2	1			
	2800	OTTA	1 S	1837	1838.3	2	2	.9			
	2695	BCUL	1 S	1838	1838.5	1.5	3	1			
	2695	PENT	21 GRF	2150	2235	100	6.2	3.1			
	2695	BCUL	23 GRF	2207.5	2309.5	24	7	2			
	2695	PENT	20 GRF	2214	2219	13	6.4	3			
	2695	BCUL	3 S	2307.5	2309	2.5	2	1			
20	2800	OTTA	22 GRF	1540	1615	120	9.6	4.7			
	2695	SGMR	20 GRF	1541.9	1604.6	46.7	9.7	2.9			2
	2695	BOUL	45 C	1542.5	1548	7	4	1			
21	2800	OTTA	240 R	1500	1508	8	2	1			
	2800	OTTA	20 GRF	1535	1605	125	3.2	1.8			
	2695	PENT	20 GRF	2135	2150	85	2	1			
22	8800	MANI	3	0211.4	0211.9	.9	29.9	15			1
	8800	MANI	3	0408.9	0409.2	1.9	23.9	3			2
	2800	OTTA	27 RF	1258		167	1	.9			
	2800	OTTA	24 R	1258	1305	7	1	.5			
	2800	OTTA	24P R	1305		130	1				
	2800	OTTA	26 FAL	1515	1545	30	-1	-.5			
	2800	OTTA	22 GRF	1725		100	1.8	1			
	2695	SGMR	1 S	1923.7	1924.2	1.1	4.4	1.3			2
	8800	SGMR	3 S	1923.8	1924.1	1.4	11.3	3.4			2
	2695	BCUL	1 S	1924	1925	2	4	1			
	2800	OTTA	2 S/F	1933.8	1934.2	2	4.2	1.6			
24	2800	OTTA	1 S	1431	1432	2	3.4	1.7			
	2695	BCUL	1 S	1432.5	1433.5	2	4	1			
	2800	OTTA	29 PBI	1433	1433	15	1.2	.6			
28	2800	OTTA	240 R	1638	1655	17	1.6	.8			
	2800	OTTA	20 GRF	1700	1720	60	1.4	.7			
29	2695	BCUL	3 S	2003.5	2004.5	3	4	1			
	2695	PENT	1 S	2057.5	2058.5	4.5	5.6	1.9			
31	2695	MANI	4	0410.5	0412.7	7.5	24.2	10.5			1

SOLAR X-RAYS BY SATELLITE
SMS GOES
OCTOBER 1977

.5 - 4Å Hourly Averages (10^{-5} watts/m^2)

MO DA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean
10/ 1	B	B	B	B	B	B	B	B	M	B	M	M	M	M	M	M	0.12	B	B	B	B	B	B	B	B
10/ 2	B	B	B	B	B	B	B	B	M	0.04	B	0.04	M	M	2.16	B	B	B	B	B	B	B	B	B	0.10
10/ 3	B	B	B	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	0.01	B
10/ 4	0.01	B	B	B	B	B	B	B	M	B	B	B	B	B	B	B	0.02	B	0.02	B	B	B	B	0.01	B
10/ 5	0.01	B	B	B	B	B	B	B	M	M	M	M	M	0.030	B	B	0.01	B	B	B	B	B	B	B	B
10/ 6	B	B	B	0.06	0.42	0.10	B	0.01	M	B	0.02	0.04	B	B	0.01	B	B	B	B	B	B	B	B	B	0.03
10/ 7	B	B	B	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	0.02	B	B	B	B	B
10/ 8	B	B	0.01	B	B	B	B	B	M	M	M	M	M	M	B	B	B	B	B	B	B	B	B	B	B
10/ 9	B	B	B	B	B	B	B	0.05	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/10	B	B	B	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/12	B	0.16	B	B	B	B	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B
10/13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	0.02	B	B	B	B	B	B	B
10/14	B	B	B	B	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/15	B	B	B	B	B	B	B	B	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	B
10/16	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/17	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/18	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/21	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/22	B	B	B	B	0.01	B	B	B	0.02	0.01	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/23	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/29	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/31	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.

SOLAR X-RAYS BY SATELLITE
SMS GOES
OCTOBER 1977

1 - 8Å Hourly Averages (10^{-4} watts/m^2)

MO DA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Mean
10/ 1	B	B	B	B	B	B	B	B	M	B	M	M	M	M	M	M	B	B	B	B	B	B	B	B	B
10/ 2	B	B	B	B	B	B	B	B	M	0.01	B	0.01	M	M	0.02	B	B	B	B	B	B	B	B	B	0.06
10/ 3	B	B	B	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	0.02	B
10/ 4	0.01	B	B	B	B	B	B	B	M	B	B	B	B	B	B	B	0.02	B	0.01	B	B	B	B	0.02	B
10/ 5	0.03	0.01	0.01	0.01	0.01	0.01	B	0.01	M	B	B	M	M	0.05	0.01	0.02	0.03	0.02	0.01	B	B	B	0.01	0.01	0.01
10/ 6	0.02	B	B	0.04	0.21	0.07	0.01	0.02	M	B	0.02	0.07	0.01	B	0.02	0.01	0.01	B	B	0.01	B	B	B	B	0.03
10/ 7	B	B	B	B	B	B	B	B	M	B	B	B	B	0.01	B	B	B	B	B	0.01	B	B	0.02	B	B
10/ 8	B	B	0.02	B	B	B	B	B	M	M	M	M	M	M	B	0.01	B	B	B	B	B	B	B	B	B
10/ 9	B	B	B	B	B	B	B	0.04	M	B	B	B	B	B	B	B	0.01	B	B	B	B	B	B	B	B
10/10	B	B	B	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/11	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/12	B	0.08	0.02	B	B	B	B	B	B	B	B	M	B	B	B	B	B	B	B	B	B	B	B	B	B
10/13	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	0.02	B	B	B	B	B	B	B
10/14	B	B	B	B	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/15	B	B	B	B	B	B	B	B	B	B	B	M	M	B	B	B	B	B	B	B	B	B	B	B	B
10/16	B	B	B	B	B	B	B	B	B	0.20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/17	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/18	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/19	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	0.02	B	B
10/20	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	0.01	B	B	B	B	B	B	B	B
10/21	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/22	B	B	B	B	0.02	B	B	B	0.02	0.02	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/23	B	B	B	B	B	B	0.01	0.01	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/24	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/25	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/26	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/27	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/28	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/29	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/30	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
10/31	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B

Note: "B" indicates the flux was below the cut-off levels.
"M" denotes periods of missing data.

SOLAR X-RAYS BY SATELLITE

GOES

OCTOBER 1977

Due to a computer malfunction, only this minimal listing is available.

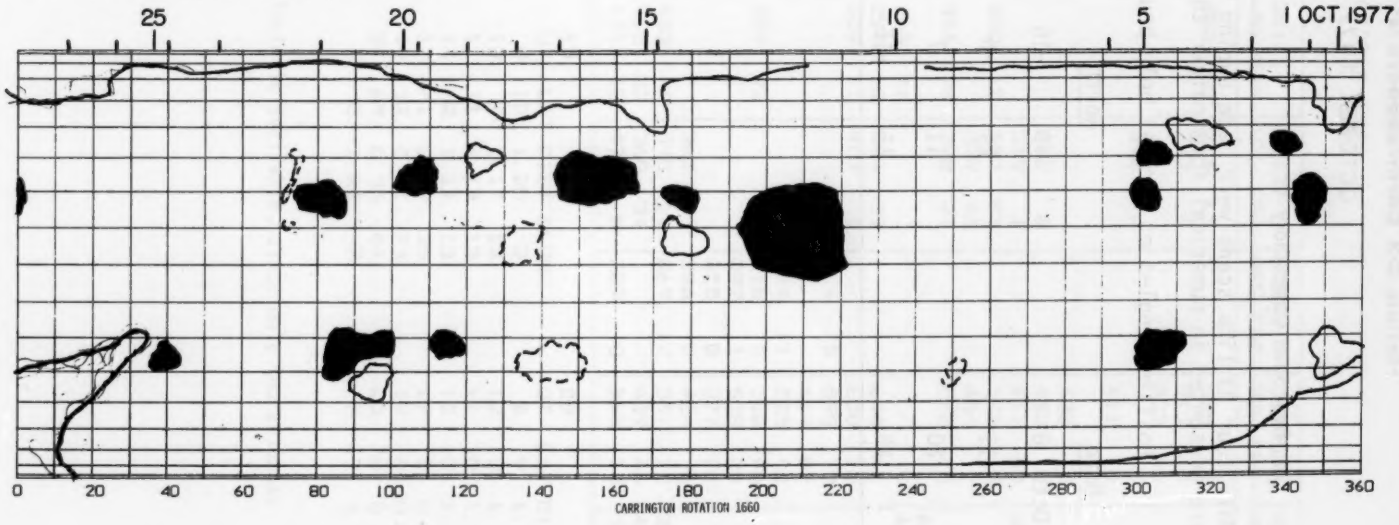
1-8Å DATA

DATE	BEGIN	MAX	END	CLASS
05	1316	1323	1329	M1
06	0421	0436	0446	M8
06	0459	0503	0509	M4
06	0739	0805	0812	M1
06	1036	1105	1126	M1
06	1135	1138	1140	C7
06	1416	1424	1434	C7
06	1947	1951	1953	C8
07	2206	2214	2223	C6
08	0228	0251	0259	C5
12	0147	0153	0155	X1
13	1709	1714	1721	C7
22	0403	0413	0422	C5
22	0848	0854	0900	M1

HELIUM 10830Å SYNOPTIC MAPS

CARRINGTON ROTATION 1660

KITT PEAK NATIONAL OBSERVATORY



23
Oct 77

CORONAL HOLES

Helium D3 Chromosphere at Solar Limb

OCTOBER 1977

Big Bear Solar Observatory

Only four D3 limb scans were made during October. These data are presented in numerical form rather than graphically.

Position angles of coronal hole boundaries (in degrees)

Date	North		South	
Oct. 8	49	-16	-156	159
" 11	24	-6	-159	159
" 20	11	?	-171	169
" 29	15	-15	-160	160

SOLAR WIND

Interplanetary Scintillations

OCTOBER 1977

UCSD 74 MHZ SCINTILLATIONS

DAY	3C48 VEL	3C48 ERR	3C144 VEL	3C144 ERR	3C147 VEL	3C147 ERR	3C161 VEL	3C161 ERR	3C237 VEL	3C237 ERR	3C273 VEL	3C273 ERR	3C298 VEL	3C298 ERR	3C459 VEL	3C459 ERR
1	316	50	397	8			302	13	264	15			375	17		
3	272	23	446	5					392	6			513	60		
4	344	9	386	15									505	56		
5									398	40						
6			411	2									411	0		
7			423	2												
10													428	*		
11	389	2							312	6			452	8		
12	347	5	354	18					319	5			461	43	389	7
13	414	0	323	5			300	12	437	83			382	5		
14									339	45			484	1		
15	495	40	306	33			354	36	328	24			572	15		
16															608	32
17	424	19	368	28			368	71							414	9
18	334	32	318	16			297	13	394	39			640	41		
19			426	5			369	11	407	6			650	12		
20											324	75	598	9		
21			315	7									614	82		
22			290	35							284	11	525	46		
23							289	22			258	0	502	46		
24											292	1	508	25		
25											255	0	377	70		
26									362	10	226	0	424	6		
27							453	1	398	11	269	17	551	19	392	25
28			428	0			518	23	360	34			439	46	401	21
29	316	7	388	23			431	10	470	8	289	0	519	15	315	20

OCTOBER	5 UT	LAT	DIST	DLON	15 UT	LAT	DIST	DLON	25 UT	LAT	DIST	DLON
3C48	9.	11.	1.27	5.	8.	10.	1.28	3.	8.	9.	1.28	1.
3C144	13.	5.	1.13	14.	12.	4.	1.17	13.	12.	3.	1.21	11.
3C147	12.	12.	1.11	14.	11.	11.	1.15	13.	11.	10.	1.19	11.
3C161	14.	-2.	1.07	14.	14.	-2.	1.11	13.	13.	-3.	1.15	11.
3C237	18.	-2.	0.67	47.	17.	-1.	0.79	38.	17.	0.	0.88	28.
3C273	20.	30.	0.15	84.	19.	12.	0.31	73.	19.	6.	0.46	63.
3C298	22.	50.	0.43	-57.	21.	69.	0.35	-44.	20.	70.	0.33	41.
3C459	6.	8.	1.28	-5.	6.	8.	1.26	-7.	5.	7.	1.24	-9.

* indicates data for which no error estimate is available, since only two antennas were operating.

PIONEER VII

OCTOBER 1977

Date Oct. 1977	DSN Coverage (UT)	Data Time (UT)	ESP (°)	SOLAR WIND AMES[1] U_{H^+} (km/sec)	SOLAR WIND AMES[1] TAU (days)	SOLAR WIND MIT[2] U_{H^+} (km/sec)	SOLAR WIND MIT[2] N_{H^+} (H^+/cc)	COSMIC RAY PROTONS[3] (particles/sec) 6-13 (Mev*)	13-175 (Mev**)	>175 (Mev)
26	0854-1325	1000	012.6	341.†	1.27					
		1100		341.						
		1200		341.						
		1300		341.						

[1] Wolfe NASA/ARC
[2] Simpson - University of Chicago

* Includes He 0.6-13 Mev/nucleons and electrons ∿0.5 Mev - see J. Retzler and J. A. Simpson, J. Geophys. Res., 74, 9, 2149-2160, 1969 for discussion of the electron response of Pioneer VII.

** Includes He >13 Mev/nucleons.
Q Used to indicate that a rate is at its quiescent level.

ESP = Earth-Sun Probe Angle.

† Peak velocity.

Note: Data sampled hourly unless otherwise noted.

PIONEER VIII

OCTOBER 1977

Date Oct. 1977	DSN Coverage (UT)	Data Time (UT)	ESP (°)	SOLAR WIND[1]				IP E-FIELD[2]	IMF[3]		COSMIC RAY PROTONS[4] (particles/sec)	
				U_{H^+} (km/sec)	N_{H^+} (H^+/cc)	T_{H^+} (x10^6°K)	TAU (days)	400 Hz (mv)	|B| (γ)	φ (°)	>13.9 Mev	>64 Mev
10	0257-0604	0300						0.61			7.55	0.625
		0400						.51			7.57	.84
		0500						.42			7.82	.49
		0600						.35			7.64	.73

1 Wolfe - NASA/ARC
2 Scarf - TRW, Inc.
3 Ness - NASA/Goddard & Mariani - Univ. of Roma
4 Webber - Univ. of N.H.

* Peak velocity

Note: Data sampled hourly unless otherwise noted.

ESP = Earth-Sun Probe Angle.

Note: Solar wind and magnetic field data not available.
Engineering data indicate a possible loss of the sun pulse--more probable that sun pulse sensitivity below threshold due to spacecraft location.

INFERRED IP MAGNETIC FIELD

BARTELS ROTATION	DATE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
1950	MAR 7							-	TA	A*		TA						*	*	AT			T*			-	TA	
1951	APR 3							*				*								AT	TA	T*	T*			*	AT	TA	A*	
1952	APR 30		AT					TA	AT	T*		-				-	-			A*	TA	AT	AT		A*			-	
1953	MAY 27	-						*	TA						-	*				-				T*					
1954	JUN 23						AT			AT		TA	T*	AT			TA	A*					AT	A*	TA	AT	AT			A*
1955	JUL 20		T*								TA	A*								AT	T*	TA	TA	TA	-	TA	TA				
1956	AUG 16							TA	T*							*		AT				-	AT	-	AT	-	AT	-	TA	-	-	-	-
1957	SEP 12	-	-	AT	-	-	-	-	-	-	-	AT	-	-	AT	-	AT	-	-	-	-	-			AT			-				
1958	OCT 9	AT	*	A*		A*		*			TA		A*			*		-	-	-	*		TA	AT		AT		-			AT		
1959	NOV 5		AT	TA			TA		T*		*	AT	*			-														*		
1960	DEC 2							TA			*					AT			*						-	*			-	TA	-		
1961	DEC 29	-	AT	-	*	*			AT					*		*	A*		*	*						*					AT		
1962	1977 JAN 25				-		-	-	TA	-		A*			AT	-	*	-				*	-				TA						
1963	FEB 21	AT		-	-	-	TA		TA				*								-			-								
1964	MAR 20		TA		AT					*				-	-					A*				-								
1965	APR 16			TA		TA	-	AT	TA		TA		AT			-	-	TA		AT	AT			TA							AT		
1966	MAY 13	TA		-	-		TA		TA											AT		-	-	AT	T*	-	T*				AT	AT	-	
1967	JUN 9								TA		-			TA						AT	A*					AT	*		A*			TA	TA
1968	JUL 6										A*			T*	TA	TA			T*			AT			-		AT			-			
1969	AUG 2		TA						TA	-				TA	*								AT	TA								
1970	AUG 29			-	-	-		TA										AT	AT			AT		TA		TA	-	AT		AT			
1971	SEP 25						-																										

Thule October data not available at time of publication.

[ ] = definitely towards the sun [ ] = definitely away from the sun

T = towards the sun A = away from the sun * = effect doubtful or not discernible - = missing data

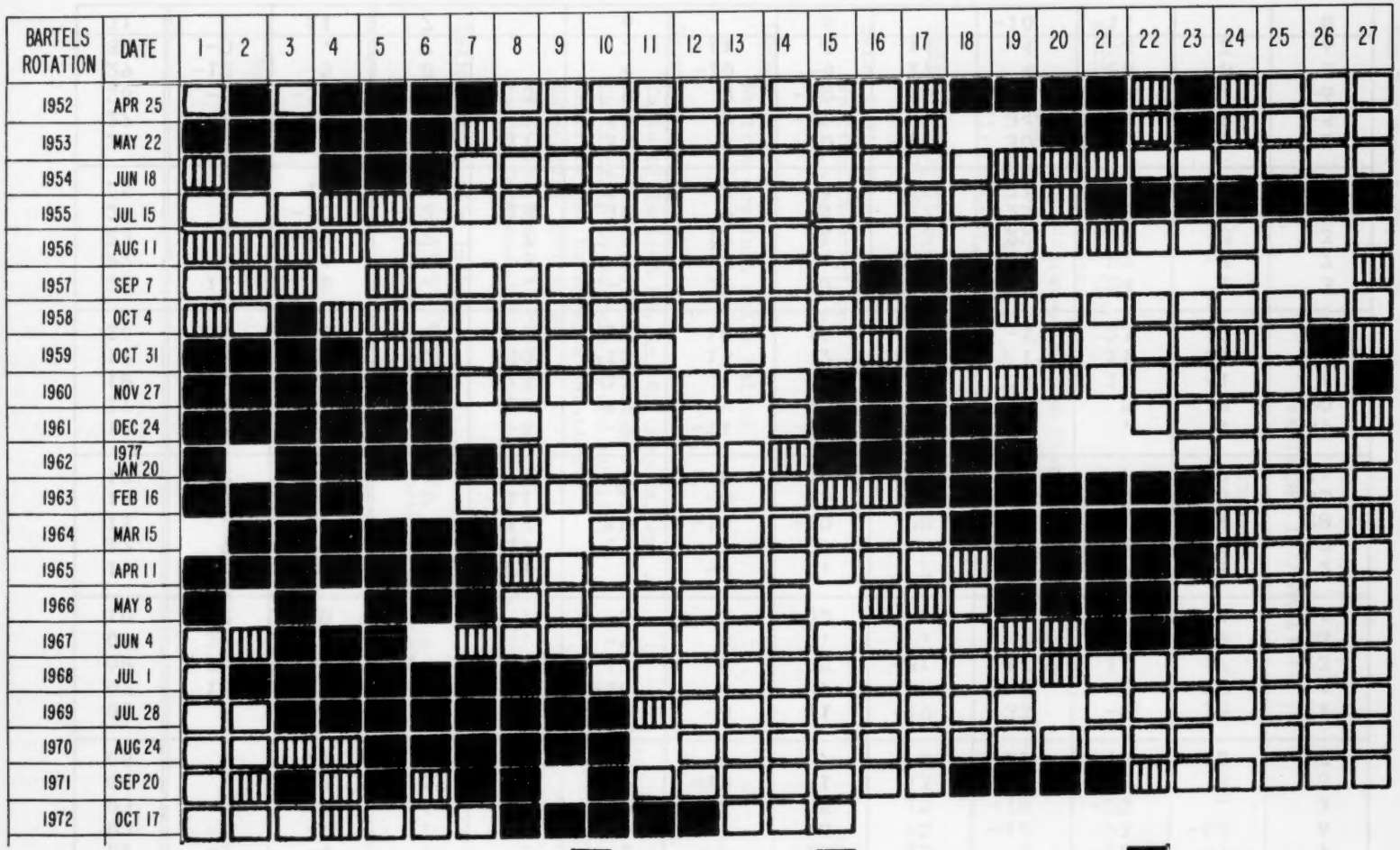
The table shows daily inferences of the polarity of the interplanetary magnetic field. The first half of the day is based principally on magnetograms produced by the magnetometer at the Vostok Antarctic Station of the USSR. The magnetometer of the U.S. Air Weather Service now operated at Thule by the Danish Meteorological Institute is used for the second half of the day.

Note: The Bartels Rotation numbers after Rotation number 1955 were incorrect in this Table in SGD issues 385 Part I through 389 Part I.

Errata: Thule data for December 5, 6, 10, 11, 12 and 19, 1976 have been corrected.

Note: The Bartels Rotation numbers after Rotation Number 1955 were incorrect in data table in old issues of [illegible]
Errata: Thule data for December 5, 6, 10, 11, 12 and 19, 1976 have been corrected.

STANFORD MEAN SOLAR MAGNETIC FIELD



POLARITY OF THE MEAN SOLAR MAGNETIC FIELD: ☐ = FIELD >2μT, ▥ = -2μT ≤FIELD ≤2μT, ■ = FIELD <-2μT

No box visible indicates no data available for that day.

Note: Data are taken daily at 2000 UT. Dates given are not Bartels Rotation dates. These earlier dates correspond to the occurrence of phenomena on the sun which affect the Earth during the given Bartels Rotation.

29 Oct 77

STANFORD MEAN SOLAR MAGNETIC FIELD (MICROTESLA)

	1976		1977									
	NOV.	DEC.	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.
DAY												
01	-2	-4	.	5	2	-7	-13	13	2	-16	-9	9
02	-3	-2	.	0	0	-17	-6	15	-12	-23	-13	6
03	-4	5	4	-6	-2	-16	-5	15	-18	-25	.	3
04	1	13	15	-8	-9	-12	1	13	-26	-23	3	13
05	1	21	.	-11	-17	-9	7	0	-31	-16	12	13
06	7	23	3	-17	-22	-4	11	-19	-33	-5	18	11
07	16	25	-7	-12	-20	0	7	-32	-26	-1	22	-6
08	25	18	-14	.	-13	5	-5	-31	-14	11	17	-13
09	23	13	-9	.	-9	8	.	.	-7	25	8	-13
10	12	8	-11	.	-3	2	-22	0	3	20	4	-4
11	.	-3	-8	21	3	-4	.	7	20	17	6	2
12	9	-4	.	19	11	-7	-29	17	29	12	13	12
13	.	-7	.	13	18	-14	-20	28	30	11	19	28
14	4	-1	8	11	3	-8	-5	38	24	5	23	35
15	-2	0	6	9	.	-8	4	40	26	7	40	46
16	-4	0	9	-3	-9	-11	12	31	18	.	.	39
17	-3	6	6	-12	-12	-9	20	24	13	5	38	20
18	.	3	3	-13	-13	1	29	18	4	13	41	6
19	0	8	0	-20	-15	13	27	19	1	19	31	6
20	.	6	-4	.	-12	18	19	16	-1	23	17	1
21	11	5	.	.	-7	21	12	10	6	24	2	3
22	9	1	-14	3	2	13	.	2	9	22	-3	7
23	2	-10	-12	7	.	17	1	-2	22	18	-2	3
24	5	-10	-12	12	15	9	-1	-7	25	8	-6	-3
25	-5	-14	-7	13	13	6	4	-15	31	4	-1	-9
26	0	-16	-6	11	13	9	-10	-10	30	0	-3	-5
27	-6	-16	0	9	10	7	-10	4	24	2	-8	-5
28	-5	-10	6	5	8	2	-10	15	6	-2	.	-6
29	-12	-5	8		4	-10	-4	19	4	-6	-8	5
30	-8	.	7		7	-11	3	14	-4	-6	3	6
31		11	7		6		6		-10	-11		8

Dot symbol entry indicates no data available for the day.

SEPTEMBER 1977 DATA

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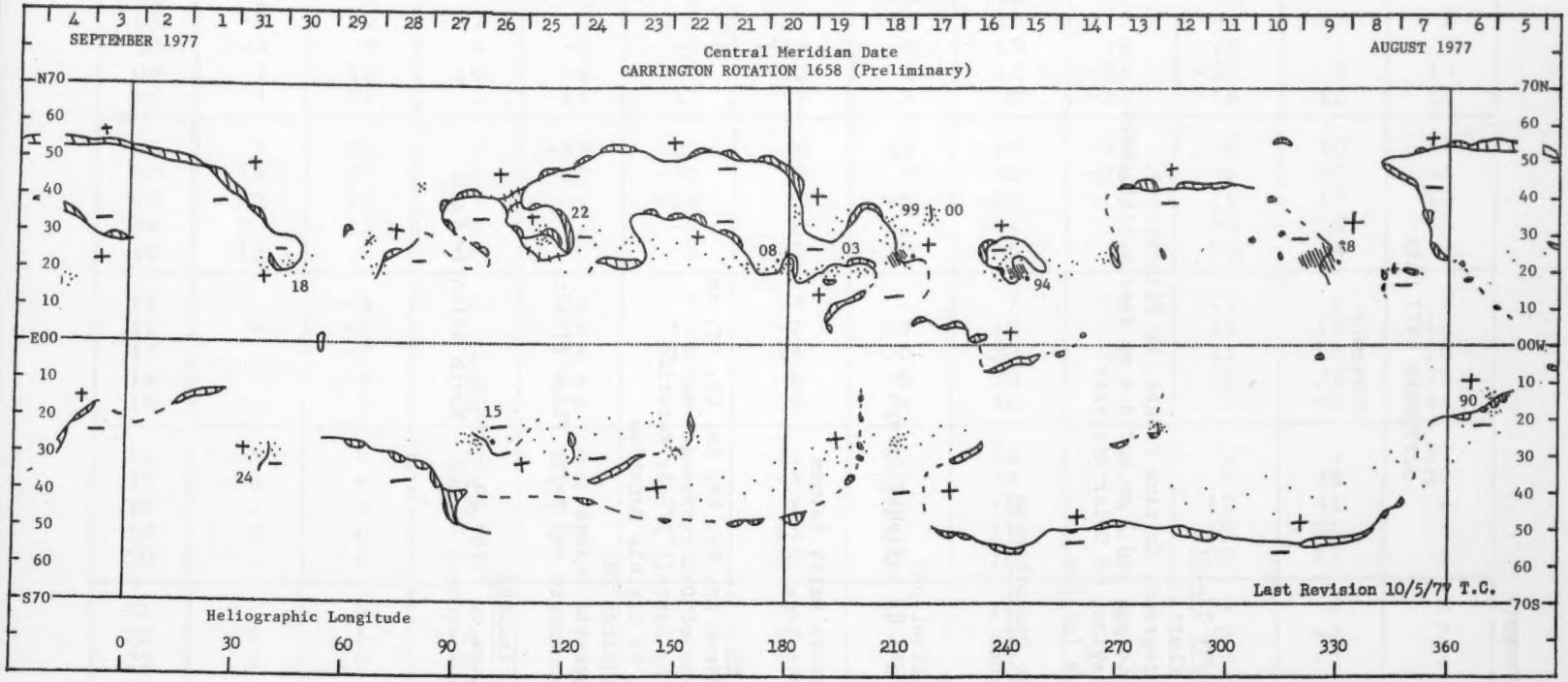
Dot symbol entry indicates no data available for the day.

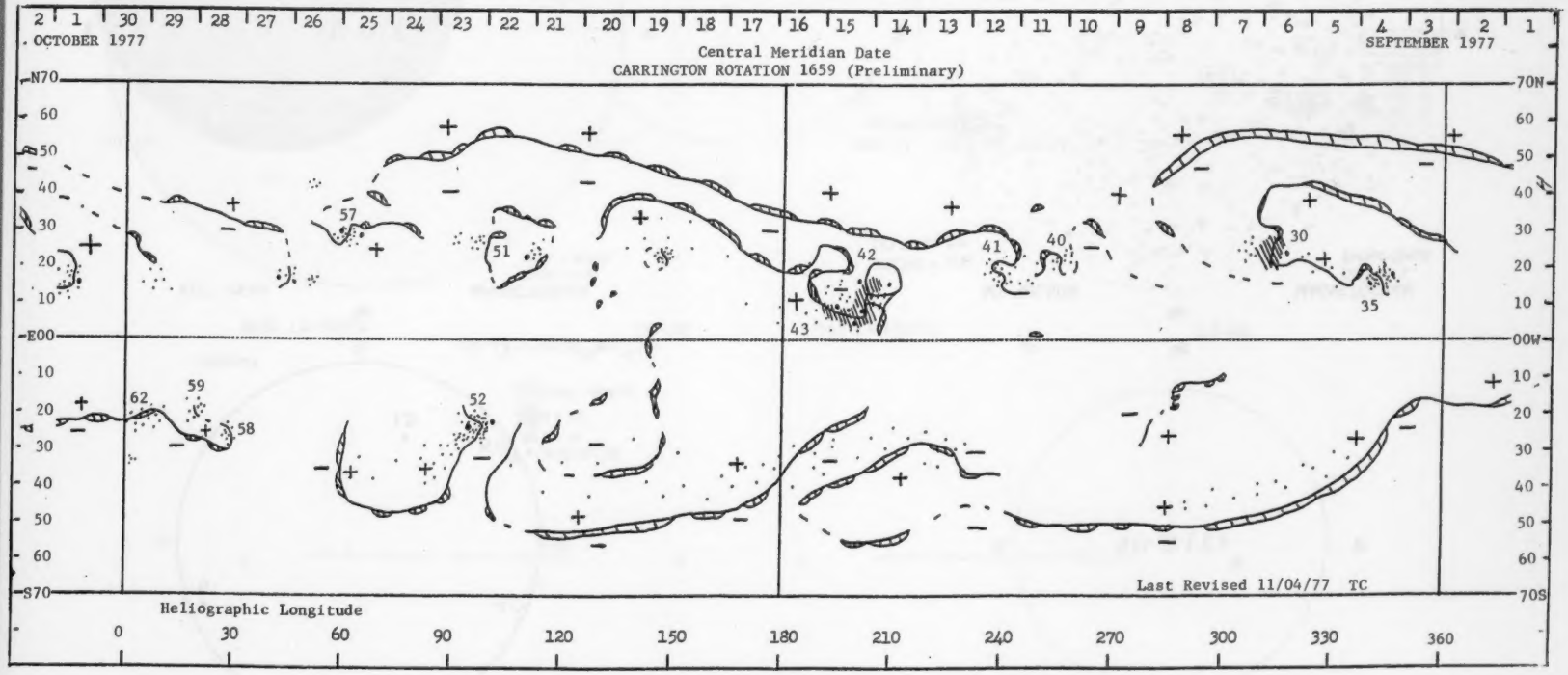
Hα SYNOPTIC CHART

CARRINGTON ROTATION 1658 (PRELIMINARY)



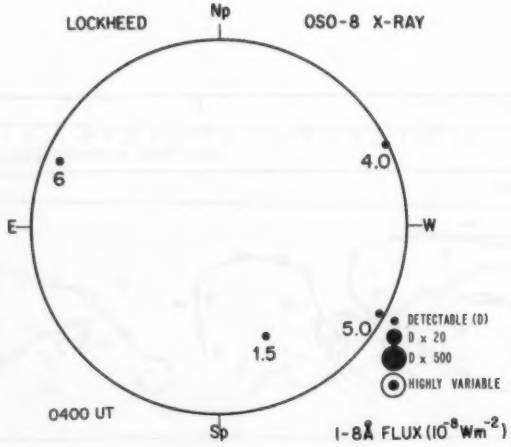
Hα SYNOPTIC CHART

CARRINGTON ROTATION 1659 (PRELIMINARY)



SEPTEMBER 1, 1977 (P = 21.07, B_o = 7.20 L_o = 29.17)

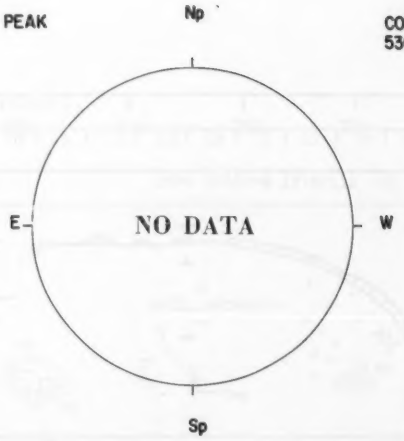
LOCKHEED OSO-8 X-RAY



I-8Å FLUX (10^{-8} Wm^{-2})

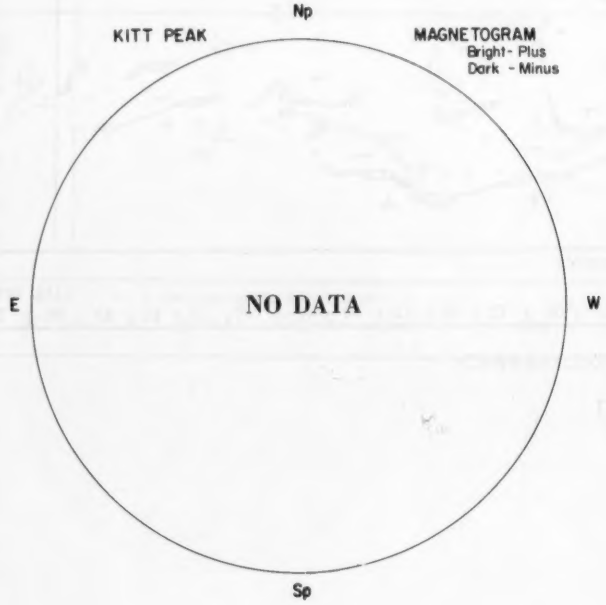
SACRAMENTO PEAK

CORONA (1.15 R_o)
5303 Å



KITT PEAK

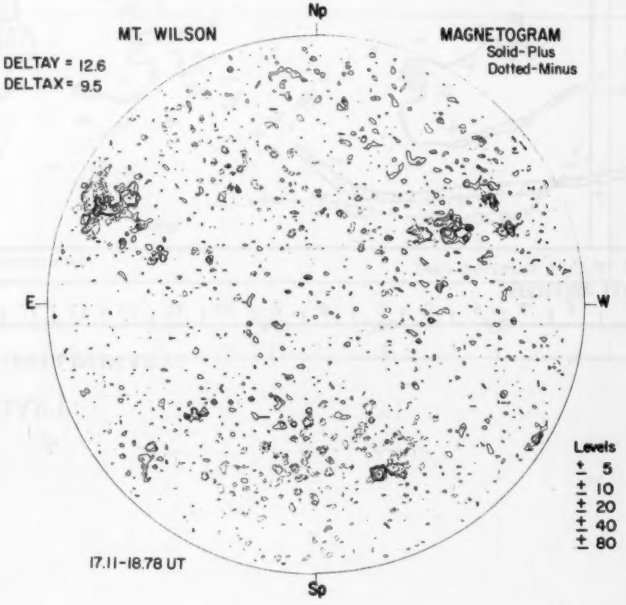
MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON

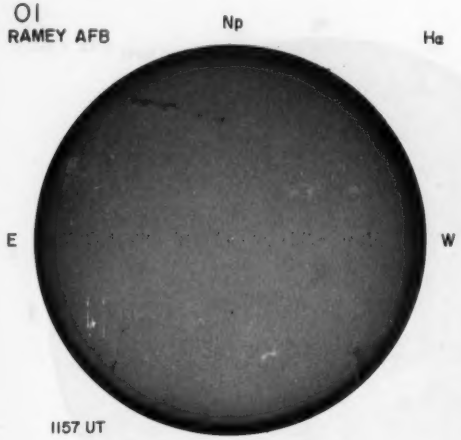
DELTAY = 12.6
DELTAX = 9.5

MAGNETOGRAM
Solid - Plus
Dotted - Minus



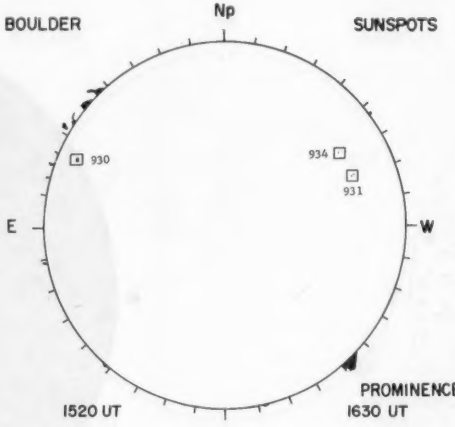
17.11-18.78 UT

01
RAMEY AFB



1157 UT

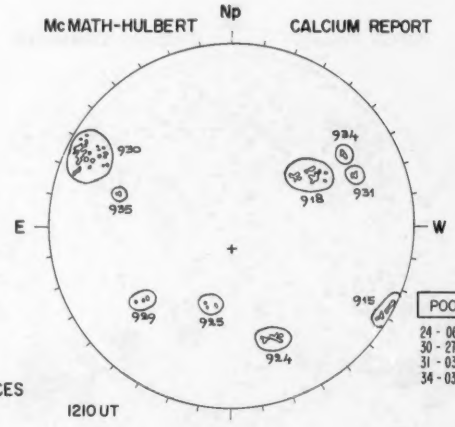
Hα BOULDER



1520 UT

SUNSPOTS

McMATH-HULBERT



1210 UT

CALCIUM REPORT

POOR	S

24 - 0600 - 30
30 - 2700 - 30
31 - 0300 - 25
34 - 0300 - 25

PROMINENCES

1630 UT

NOSC LA POSTA

2.0 CM

DATA NOT AVAILABLE AT TIME OF PUBLICATION.

Ant Temp. Unit 100° K

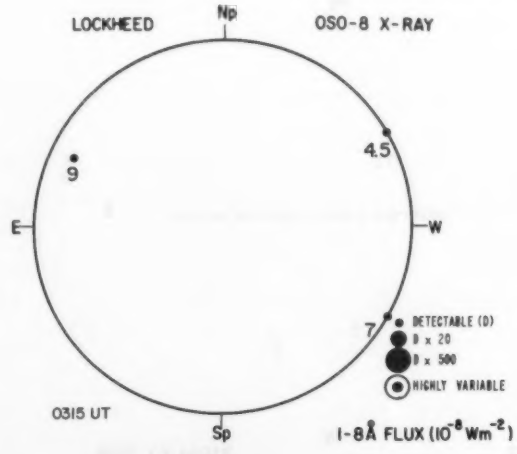
NOSC LA POSTA

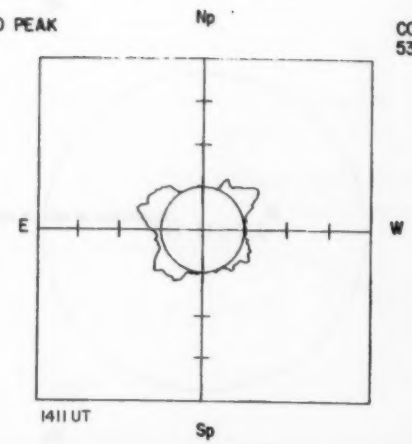
8.6 MM

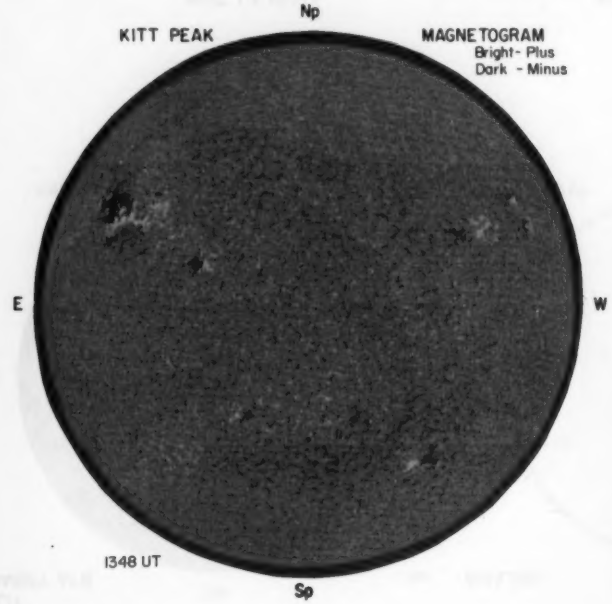
DATA NOT AVAILABLE AT TIME OF PUBLICATION.

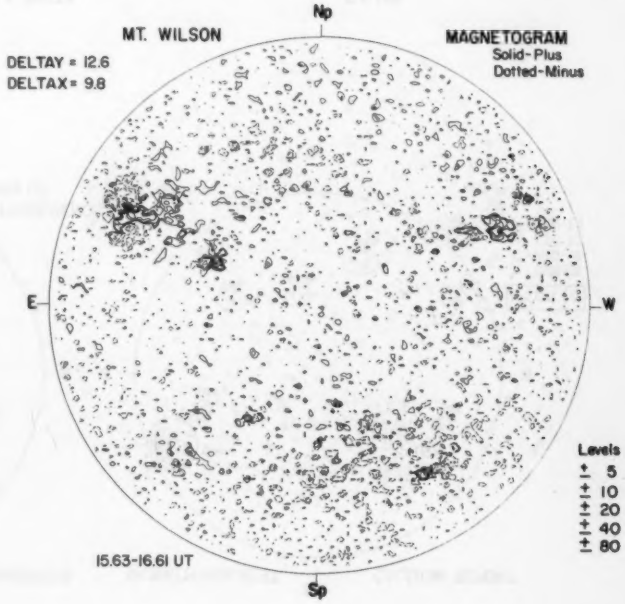
Ant. Temp. Unit 100° K

SEPTEMBER 2, 1977 (P = 21.33, B_0 = 7.21, L_0 = 15.97)



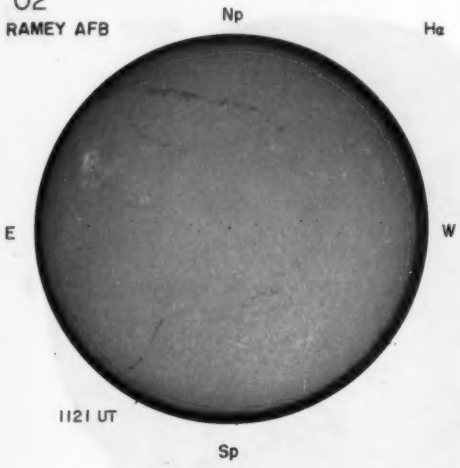






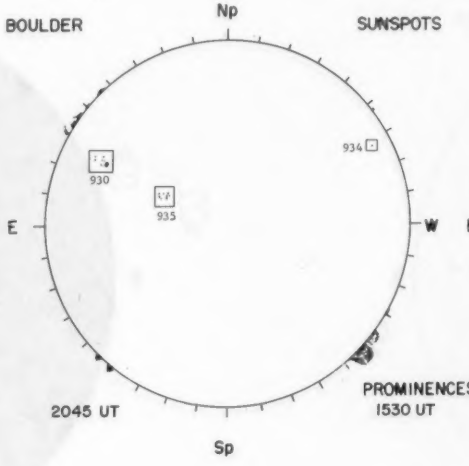
02

RAMEY AFB



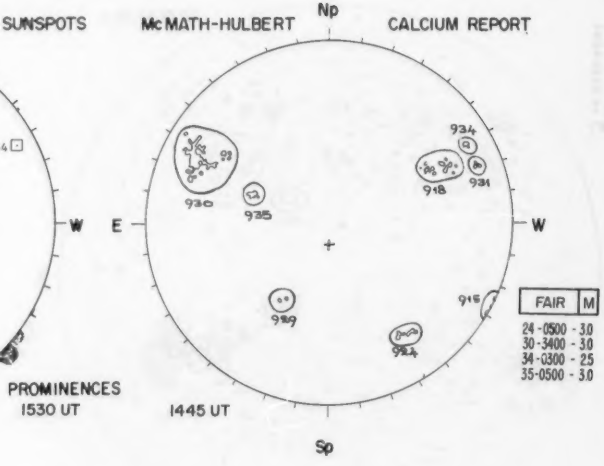
1121 UT

Hα BOULDER



2045 UT

SUNSPOTS



1445 UT

McMATH-HULBERT CALCIUM REPORT

FAIR	M
24 - 0500 - 3.0	
30 - 3400 - 3.0	
34 - 0300 - 2.5	
35 - 0500 - 3.0	

PROMINENCES
1530 UT

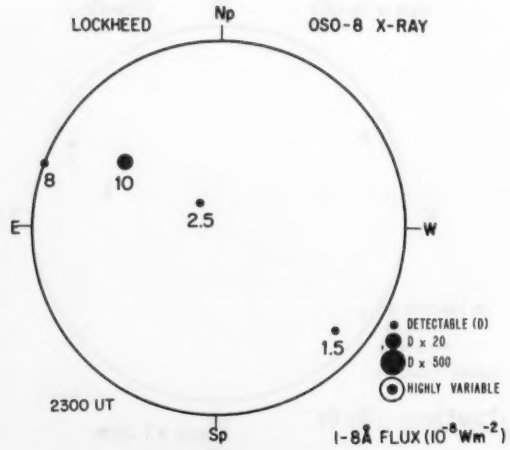
NOSC LA POSTA 2.0 CM

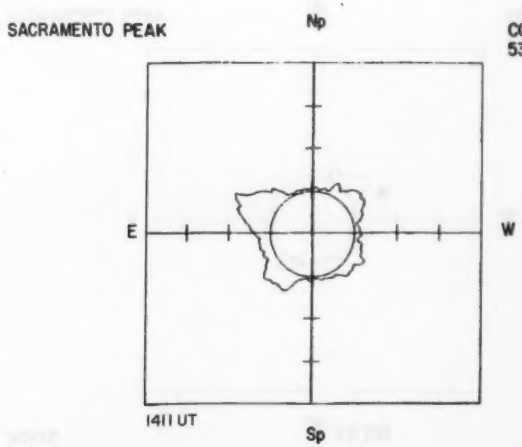
Ant. Temp. Unit 100°K

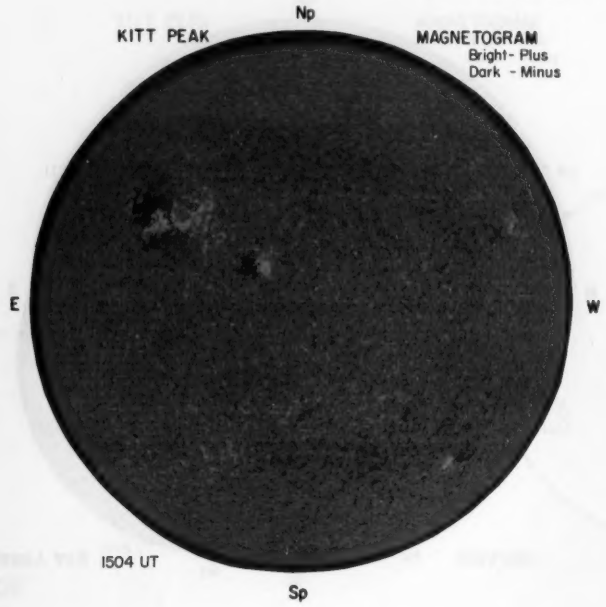
NOSC LA POSTA 8.6 MM

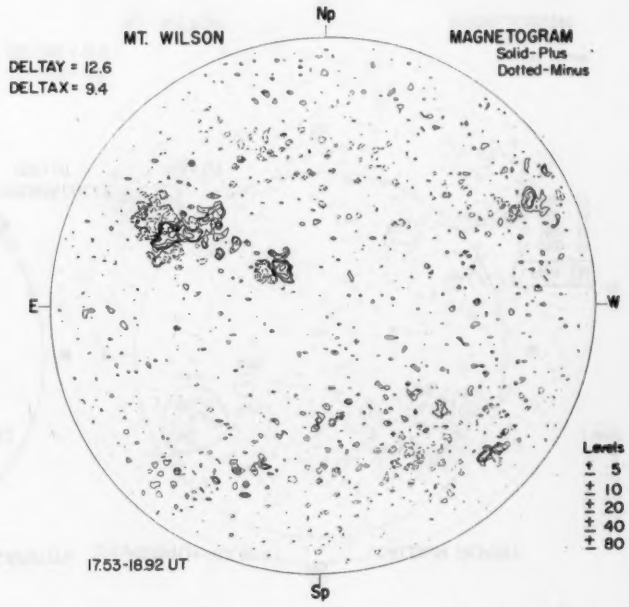
Ant. Temp. Unit 100°K

SEPTEMBER 3, 1977 (P = 21.57, B_o = 7.22, L_o = 2.76)



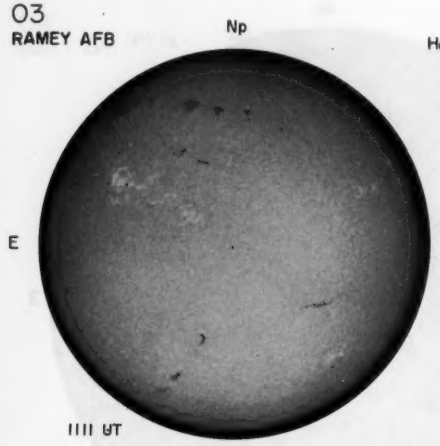






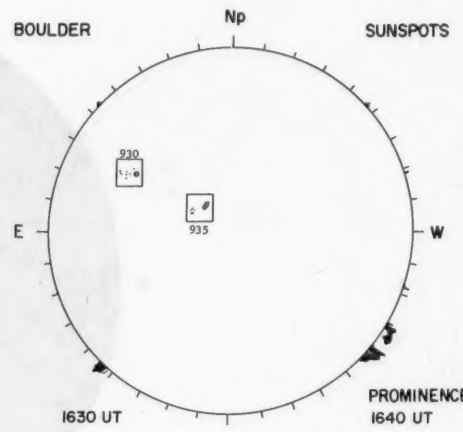
03

RAMEY AFB



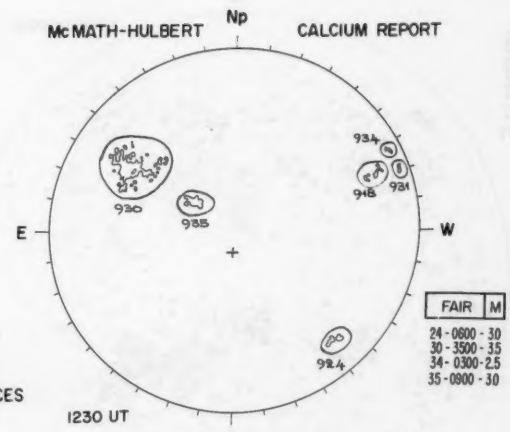
1111 UT

Hα BOULDER



1630 UT

SUNSPOTS



1230 UT

McMATH-HULBERT CALCIUM REPORT

FAIR	M
24 - 0600 - 30	
30 - 3500 - 35	
34 - 0300 - 2.5	
35 - 0900 - 30	

PROMINENCES

1640 UT

NOSC LA POSTA 2.0 CM

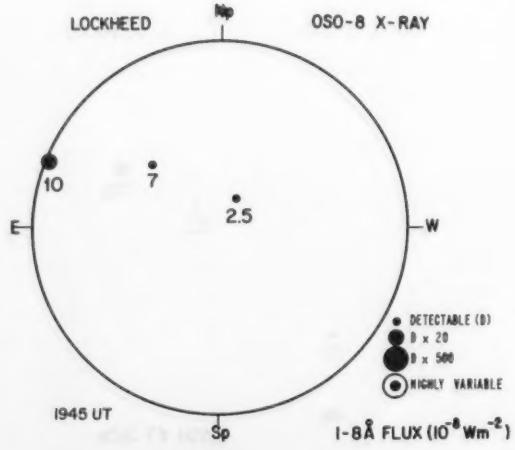
Ant. Temp. Unit 100° K

NOSC LA POSTA 8.6 MM

Ant. Temp. Unit 100° K

SEPTEMBER 4, 1977 (P = 21.81, B_o = 7.23, L_o = 349.55)

LOCKHEED OSO-8 X-RAY

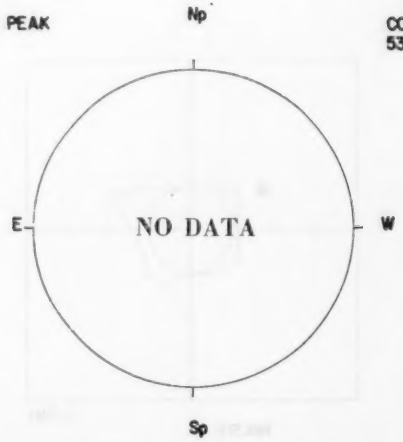


1945 UT

1-8Å FLUX (10^{-8} Wm^{-2})

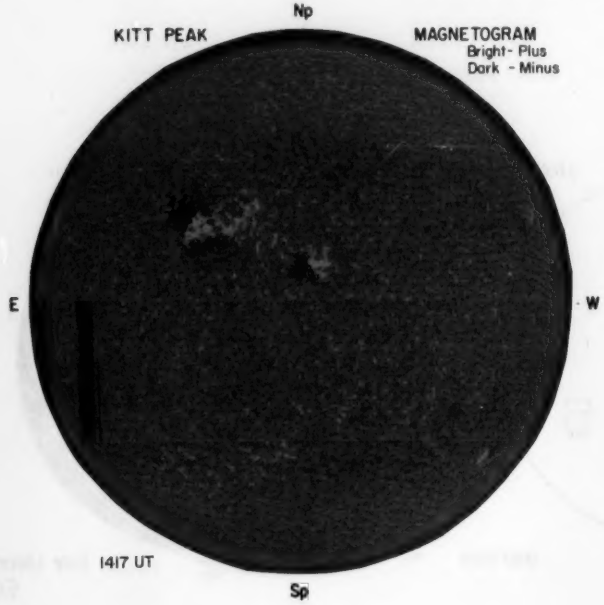
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

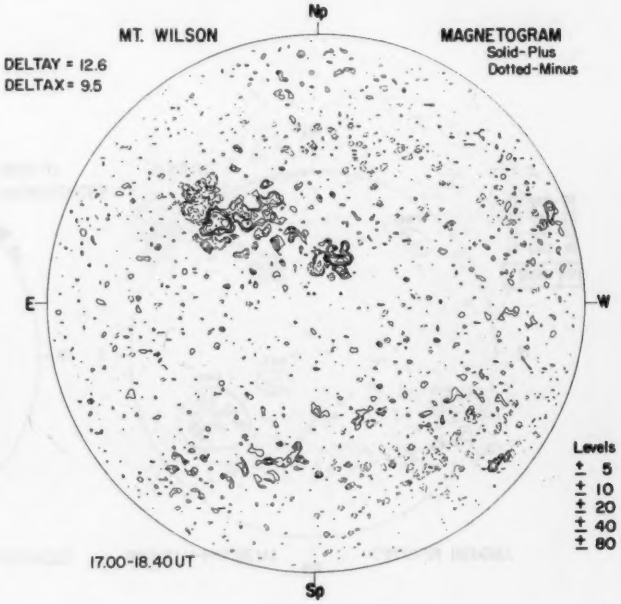


1417 UT

MT. WILSON

DELTAY = 12.6
DELTAX = 9.5

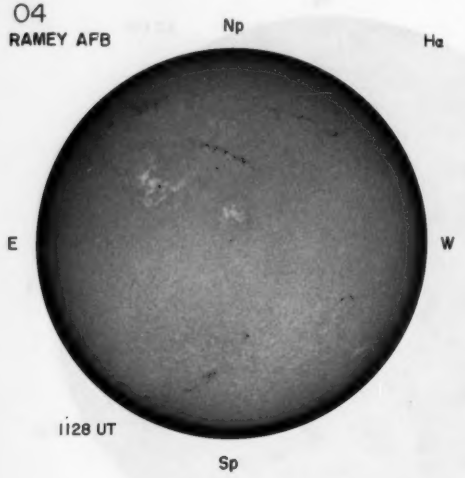
MAGNETOGRAM
Solid - Plus
Dotted - Minus



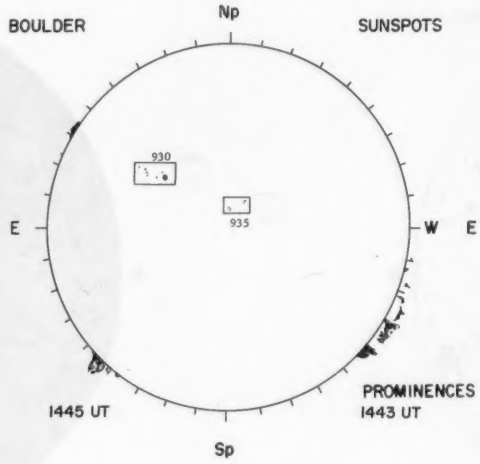
17.00-18.40 UT

04

RAMEY AFB



BOULDER



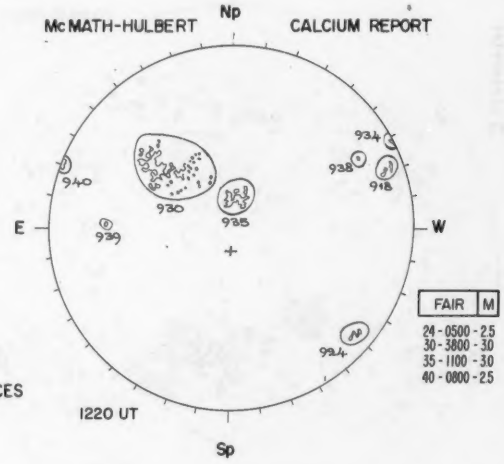
SUNSPOTS

PROMINENCES

1443 UT

McMATH-HULBERT

CALCIUM REPORT



FAIR	M
24 - 0500 - 2.5	
30 - 3800 - 30	
35 - 1100 - 30	
40 - 0800 - 2.5	

NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100°K

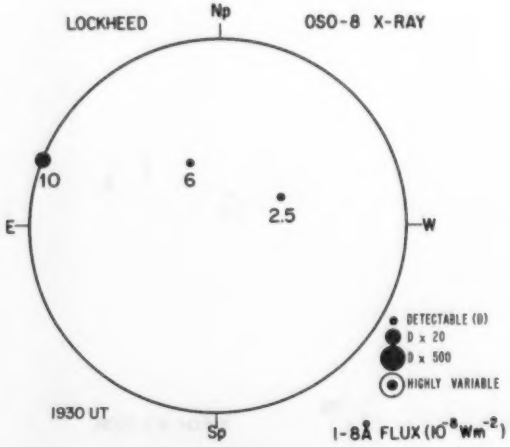
NOSC LA POSTA

8.6 MM

Ant. Temp. Unit 100°K

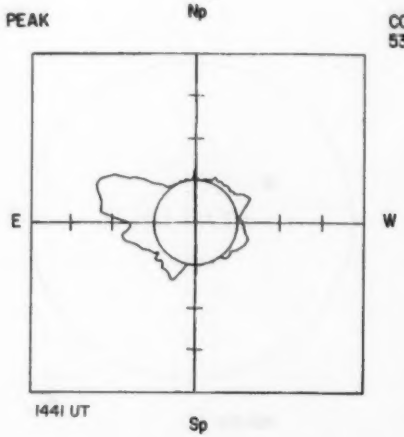
SEPTEMBER 5, 1977 (P = 22.05, B_o = 7.24, L_o = 336.34)

LOCKHEED OSO-8 X-RAY

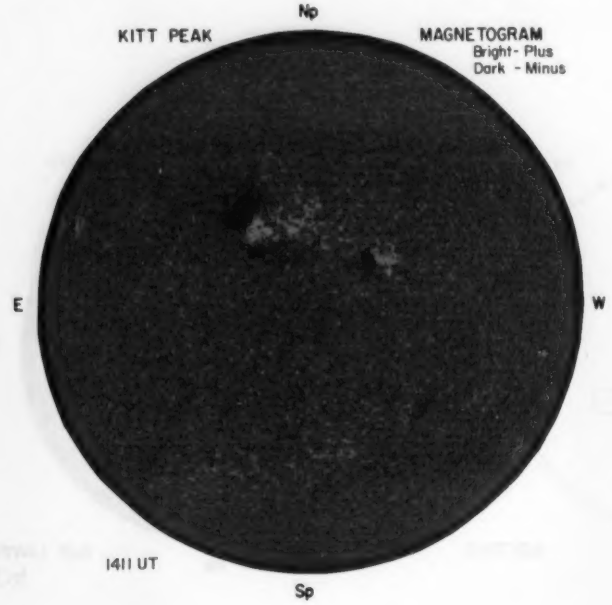


1-8Å FLUX (10^{-8} Wm^{-2})

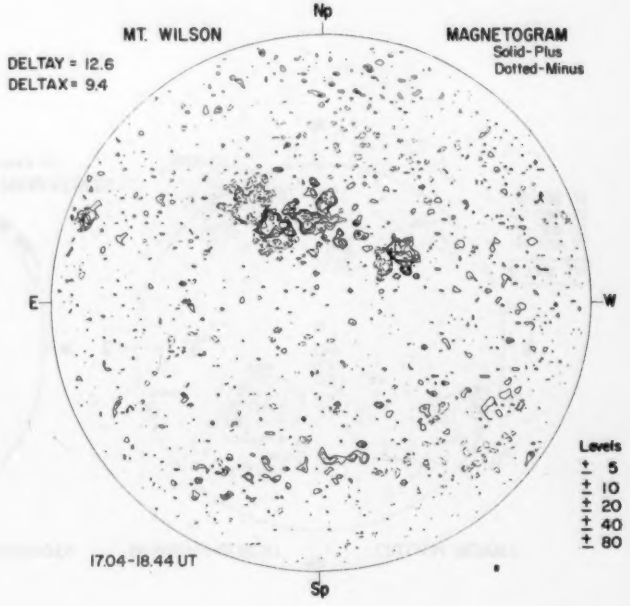
SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å



KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

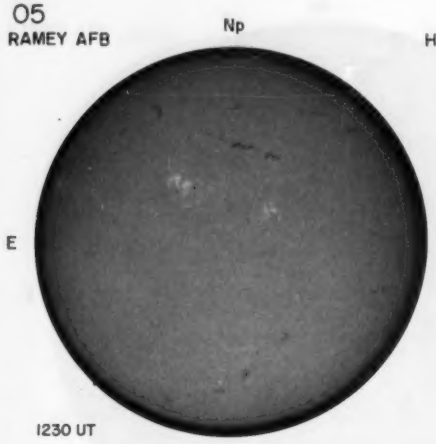


MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.6
DELTAX = 9.4



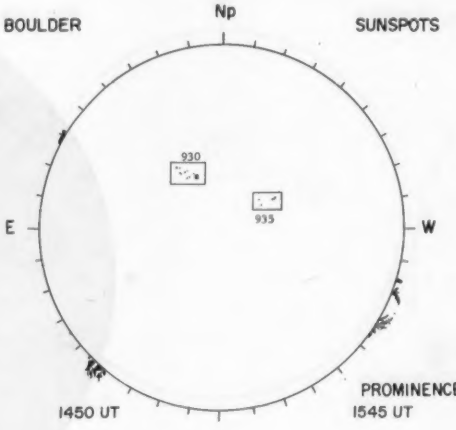
05

RAMEY AFB



1230 UT

Hα BOULDER



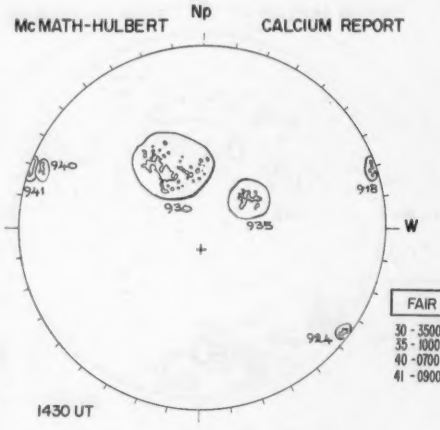
1450 UT

SUNSPOTS

PROMINENCES

1545 UT

McMATH-HULBERT



1430 UT

CALCIUM REPORT

FAIR	M

30 - 3500 - 30
35 - 1000 - 2.5
40 - 0700 - 3.0
41 - 0900 - 2.5

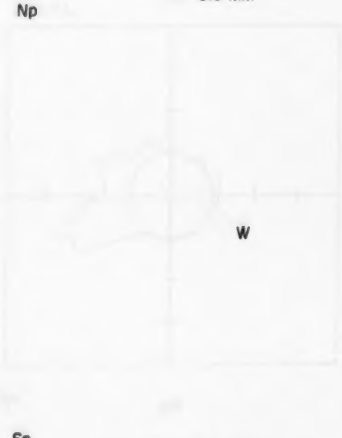
NOSC LA POSTA

2.0 CM

Ant Temp Unit 100°K

NOSC LA POSTA

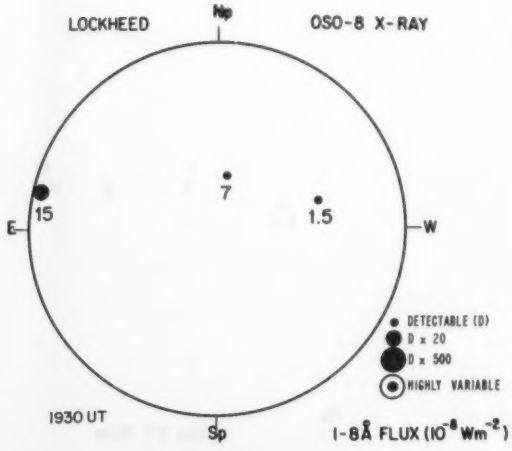
8.6 MM



Ant. Temp. Unit 100°K

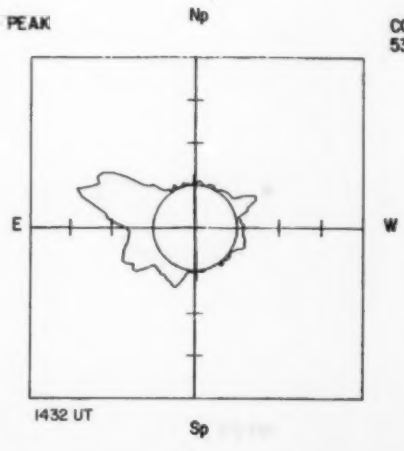
SEPTEMBER 6, 1977 (P = 22.28, B_o = 7.24, L_o = 323.13)

LOCKHEED — OSO-8 X-RAY

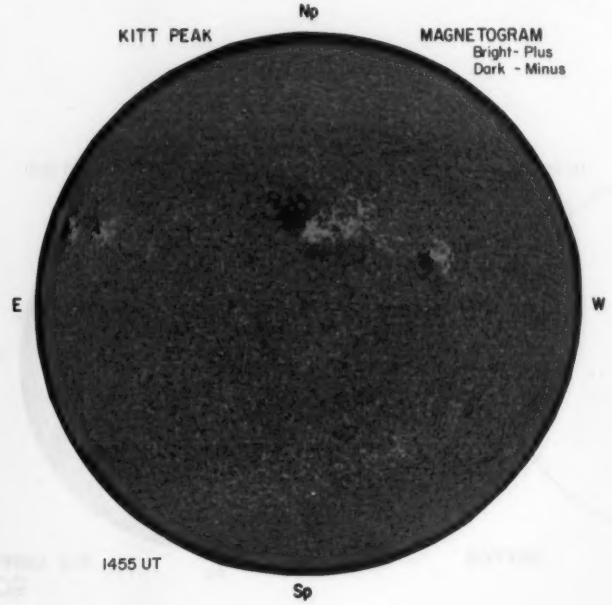


1-8Å FLUX (10^{-8} Wm^{-2})

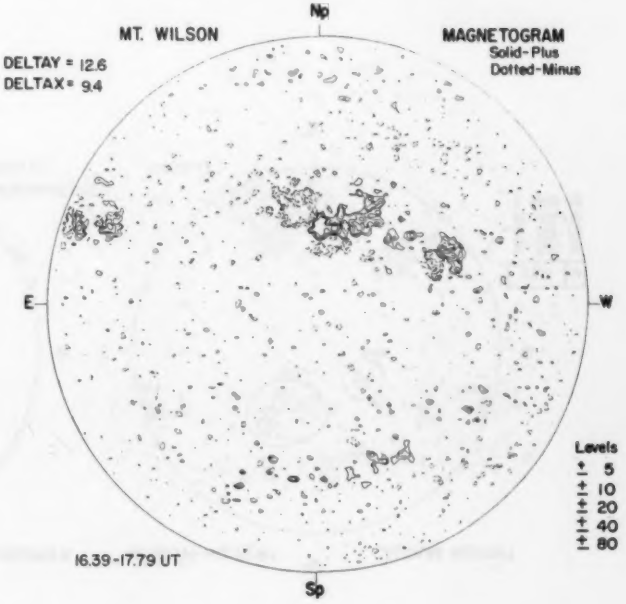
SACRAMENTO PEAK — CORONA (1.15 $R_\odot$) 5303 Å



KITT PEAK — MAGNETOGRAM
Bright - Plus
Dark - Minus

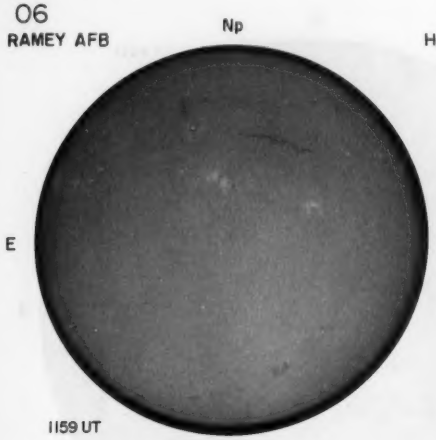


MT. WILSON — MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.6
DELTAX = 9.4



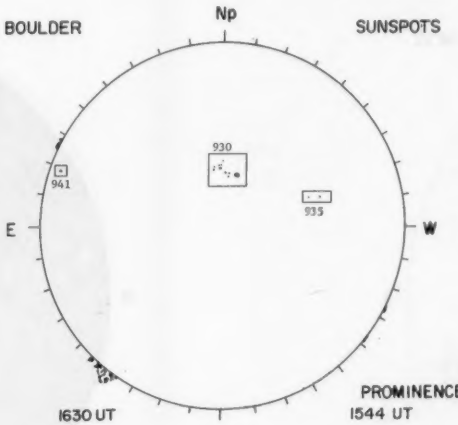
06

RAMEY AFB



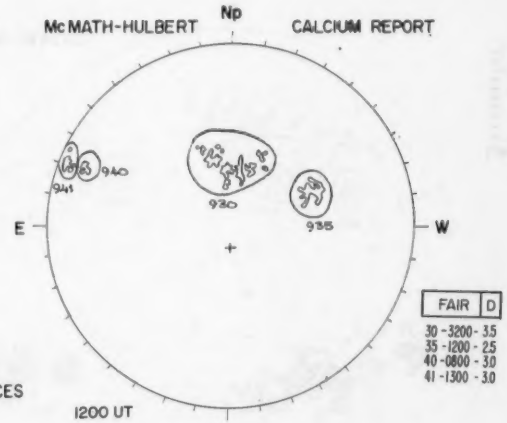
1159 UT

Hα BOULDER



1630 UT

SUNSPOTS



1200 UT

McMATH-HULBERT CALCIUM REPORT

FAIR	D
30 - 3200 - 3.5	
35 - 1200 - 2.5	
40 - 0800 - 3.0	
41 - 1300 - 3.0	

PROMINENCES

1544 UT

NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100°K

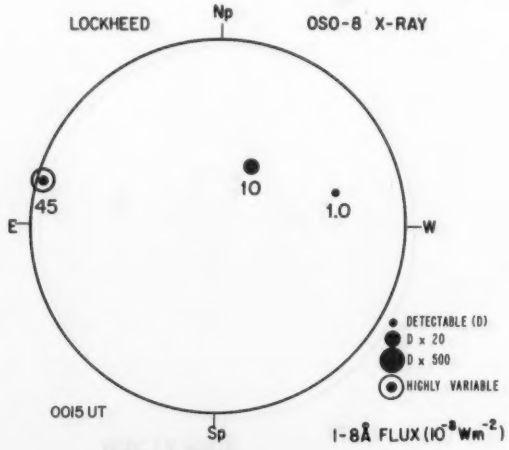
NOSC LA POSTA

8.6 MM

Ant. Temp. Unit 100°K

SEPTEMBER 7, 1977 (P = 22.50, B_o = 7.25, L_o = 309.93)

LOCKHEED OSO-8 X-RAY

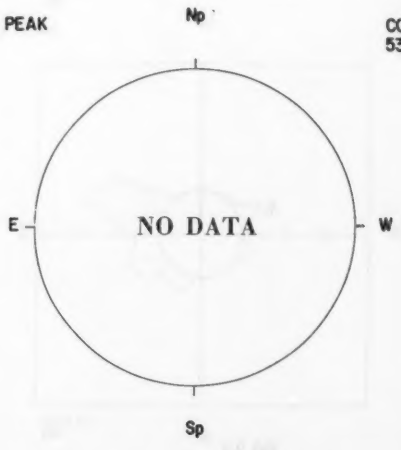


0015 UT

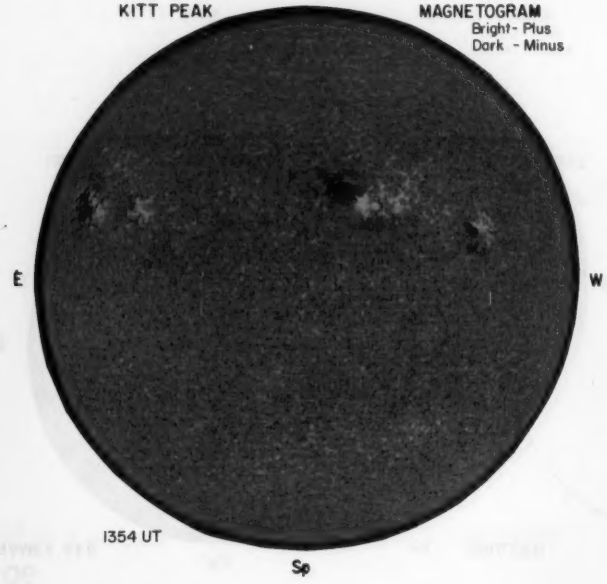
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



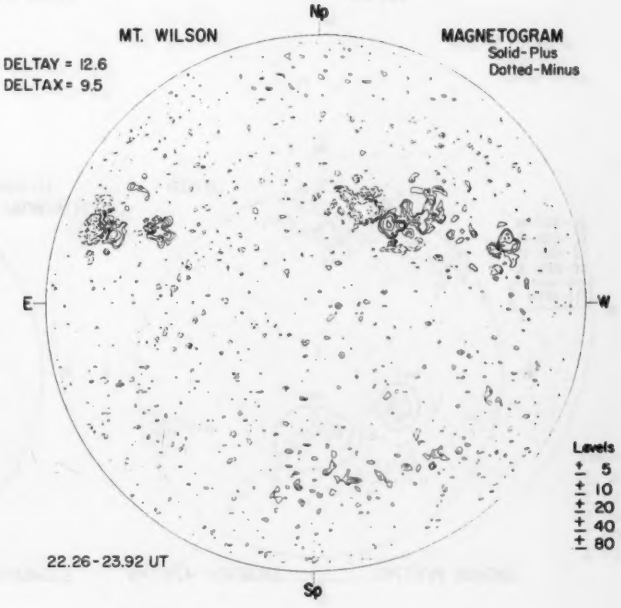
KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



1354 UT

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

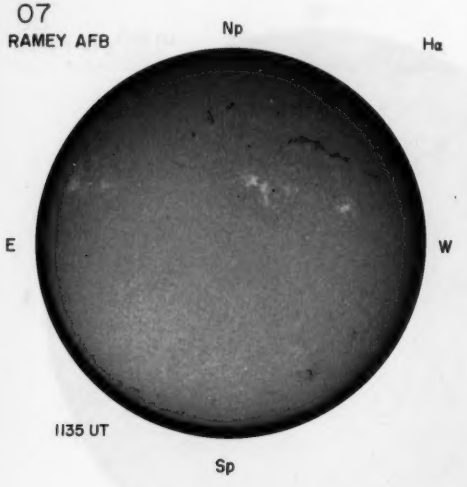
DELTAY = 12.6
DELTAX = 9.5



22.26 - 23.92 UT

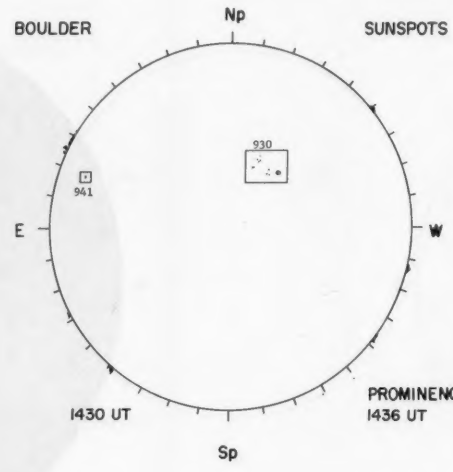
07

RAMEY AFB



Hα

BOULDER

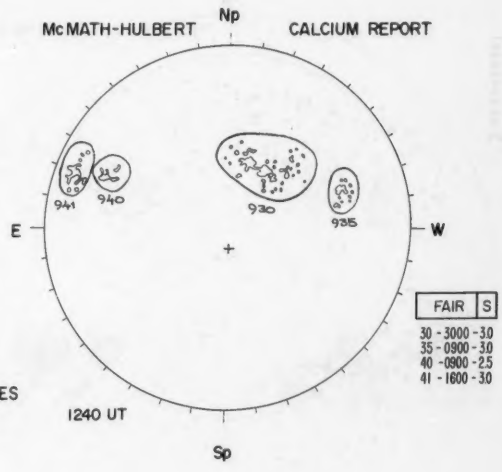


SUNSPOTS

PROMINENCES
1436 UT

McMATH-HULBERT

CALCIUM REPORT



FAIR	S
30 - 3000 - 30	
35 - 0900 - 30	
40 - 0900 - 25	
41 - 1600 - 30	

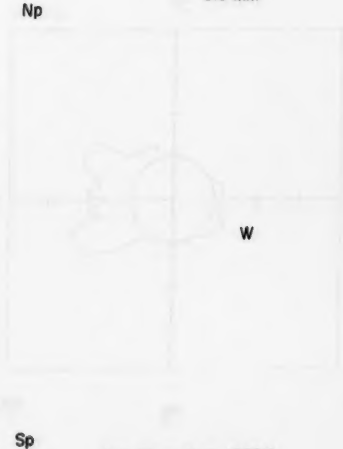
NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100°K

NOSC LA POSTA

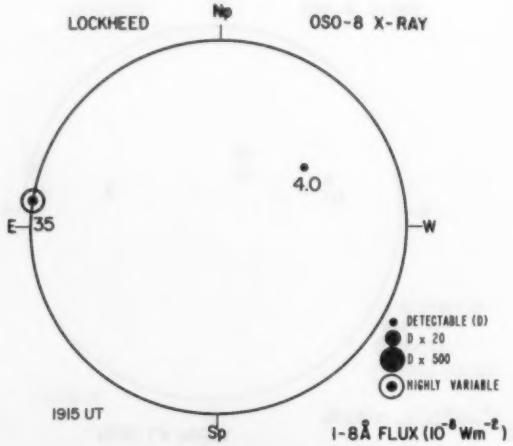
8.6 MM



Ant. Temp. Unit 100°K

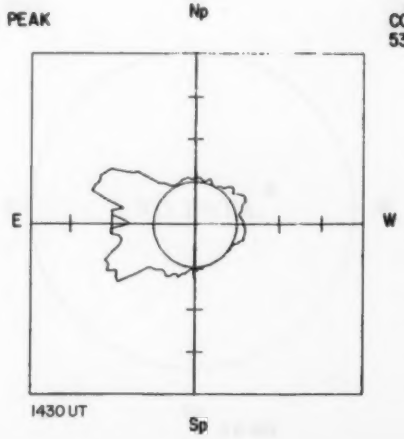
SEPTEMBER 8, 1977 (P = 22.72, B_o = 7.25, L_o = 296.72)

LOCKHEED OSO-8 X-RAY

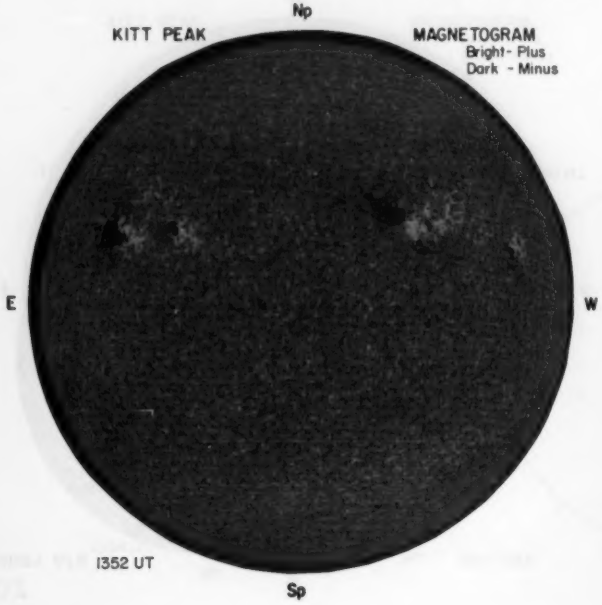


1-8Å FLUX (10^{-8} Wm^{-2})

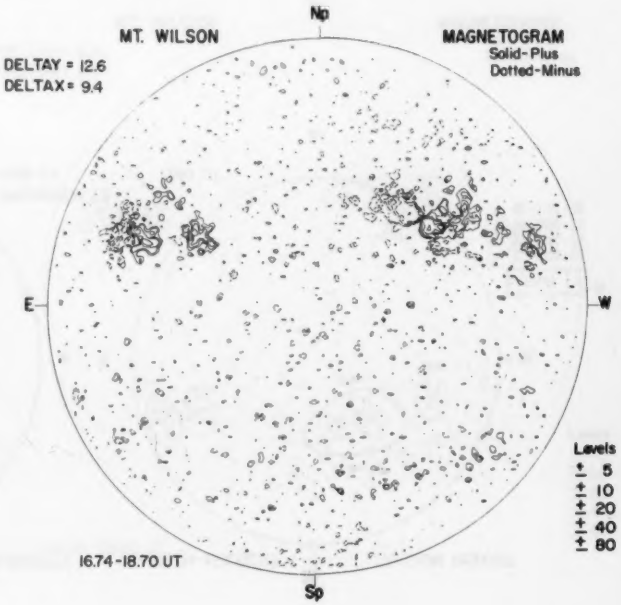
SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å



KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

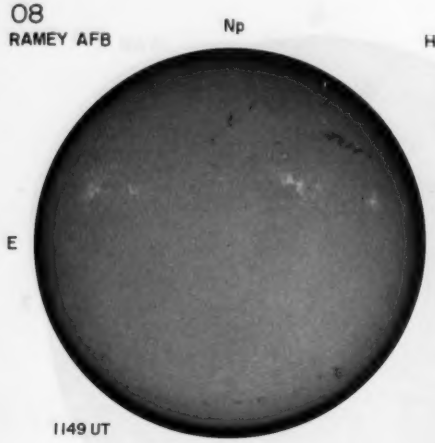


MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.6
DELTAX = 9.4



08

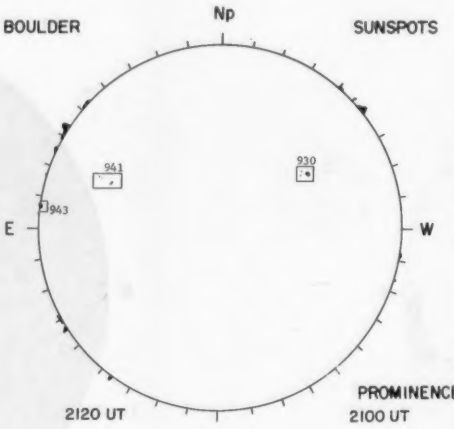
RAMEY AFB



1149 UT

Hα

BOULDER



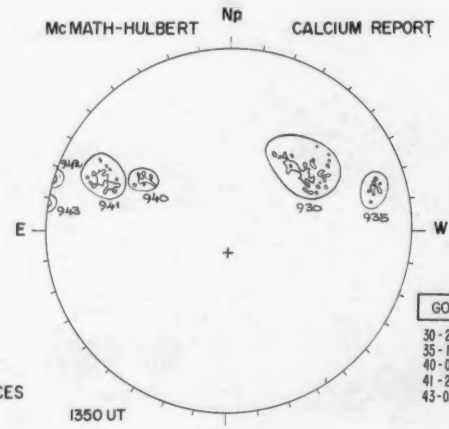
2120 UT

SUNSPOTS

PROMINENCES

2100 UT

McMATH-HULBERT



1350 UT

CALCIUM REPORT

GOOD	S
30 - 2800	- 30
35 - 1000	- 30
40 - 0700	- 25
41 - 2000	- 30
43 - 0300	- 30

NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100°K

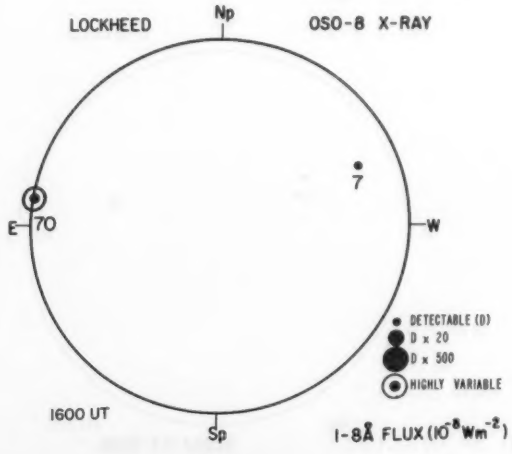
NOSC LA POSTA

8.6 MM

Ant. Temp. Unit 100°K

SEPTEMBER 9, 1977 (P = 22.93, B_o = 7.25, L_o = 283.52)

LOCKHEED OSO-8 X-RAY

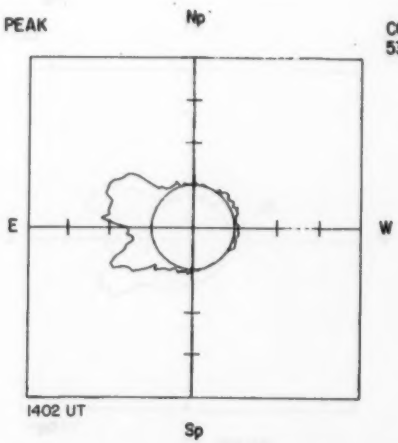


1600 UT

1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

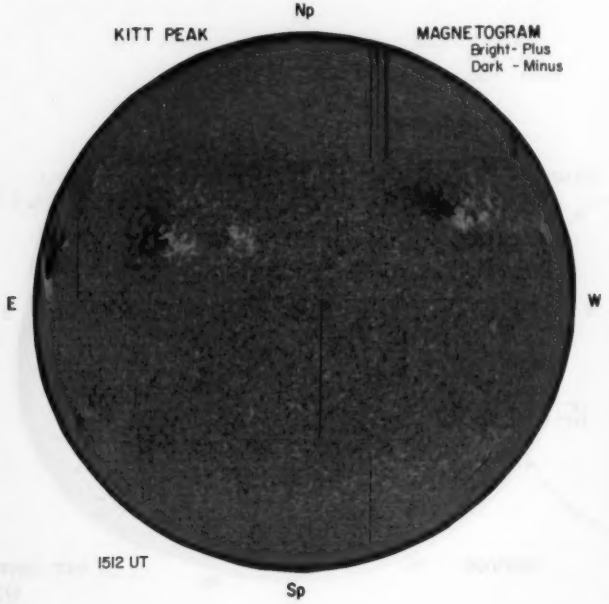
CORONA (1.15 R_o)
5303 Å



1402 UT

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

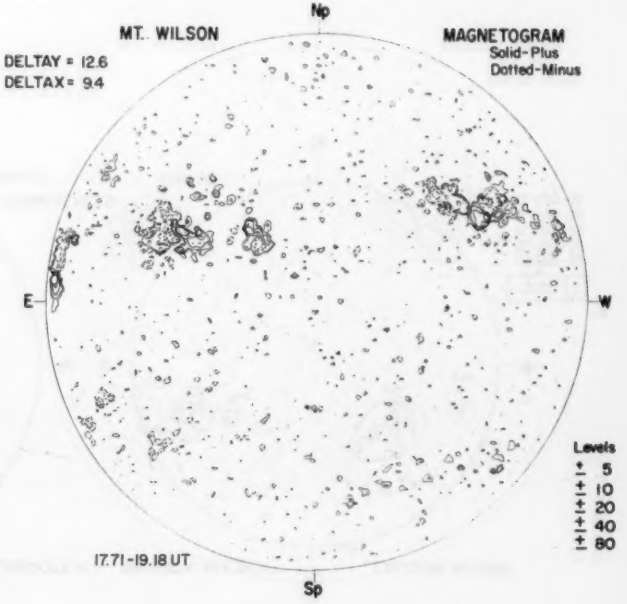


1512 UT

MT. WILSON

DELTAY = 12.6
DELTAX = 9.4

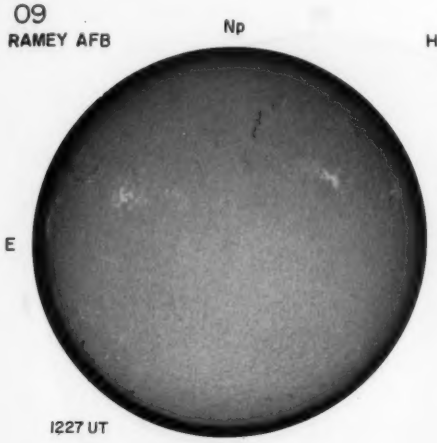
MAGNETOGRAM
Solid - Plus
Dotted - Minus



17.71 - 19.18 UT

09

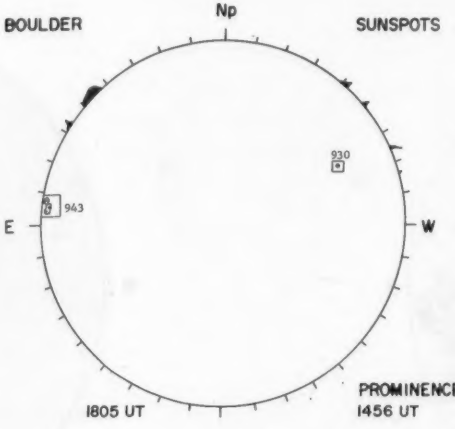
RAMEY AFB



1227 UT

Hα

BOULDER



1805 UT

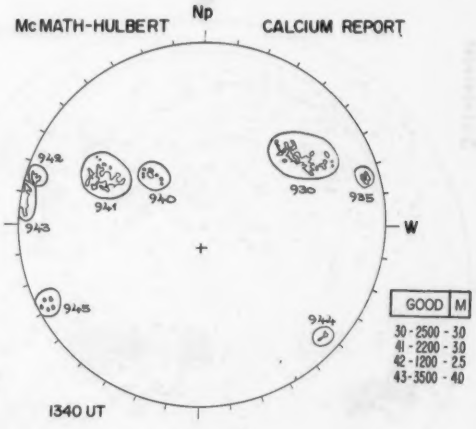
SUNSPOTS

PROMINENCES

1456 UT

McMATH-HULBERT

CALCIUM REPORT



1340 UT

GOOD	M
30 - 2500 - 30	
41 - 2200 - 30	
42 - 1200 - 25	
43 - 3500 - 40	

NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100°K

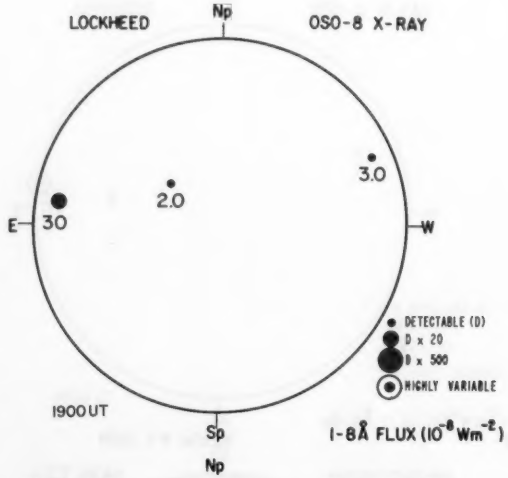
NOSC LA POSTA

8.6 MM

Ant. Temp. Unit 100°K

SEPTEMBER 10, 1977 (P = 23.14, B_o = 7.25, L_o = 270.31)

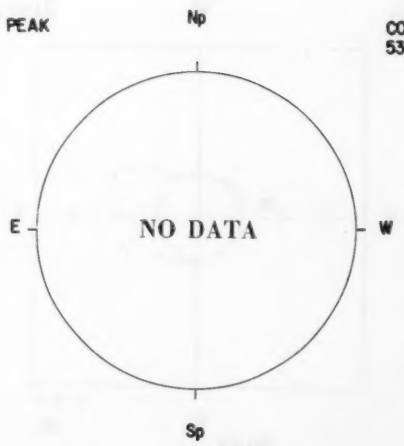
LOCKHEED OSO-8 X-RAY



1-8Å FLUX (10^{-8} Wm^{-2})

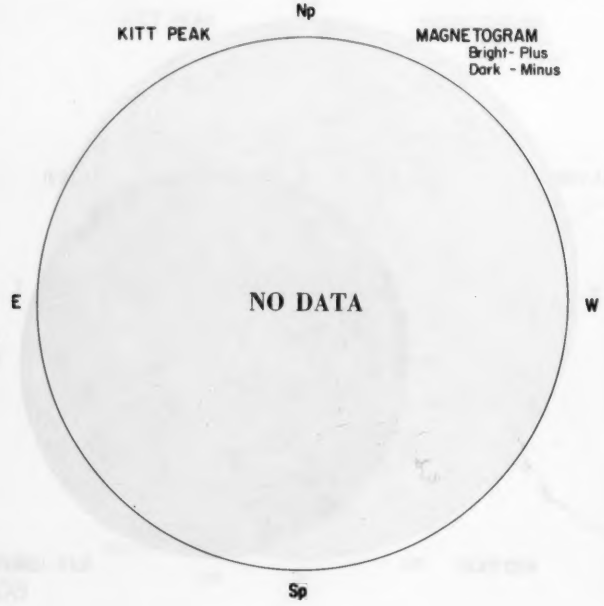
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

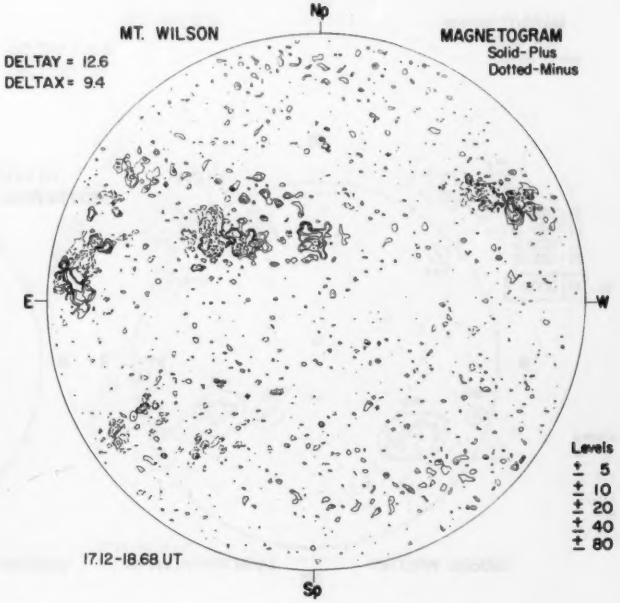
MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON

DELTAY = 12.6
DELTAX = 9.4

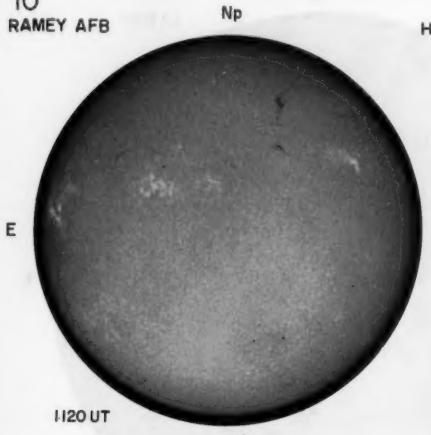
MAGNETOGRAM
Solid - Plus
Dotted - Minus



17.12 - 18.68 UT

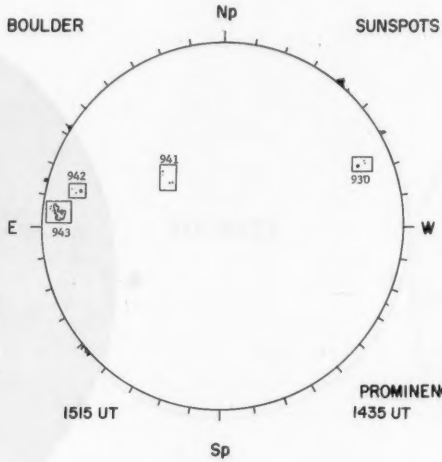
10

RAMEY AFB



1120 UT

Hα BOULDER



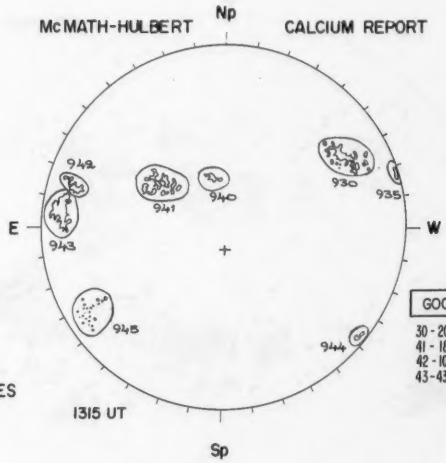
1515 UT

SUNSPOTS

PROMINENCES

1435 UT

McMATH-HULBERT



1315 UT

CALCIUM REPORT

GOOD	M
30 - 2000 - 3.0	
41 - 1800 - 3.0	
42 - 1000 - 3.0	
43 - 4300 - 4.0	

NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100°K

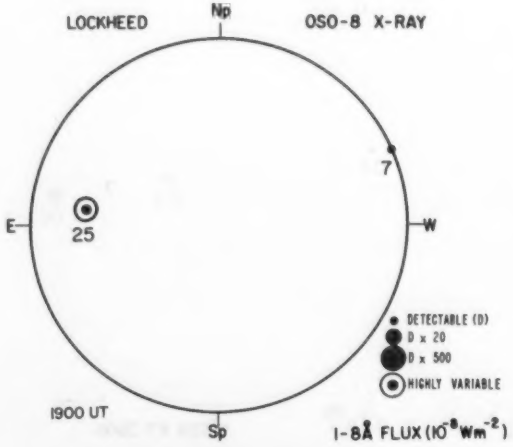
NOSC LA POSTA

8.6 MM

Ant. Temp. Unit 100°K

SEPTEMBER 11, 1977 (P = 23.34, B_o = 7.24, L_o = 257.11)

LOCKHEED OSO-8 X-RAY

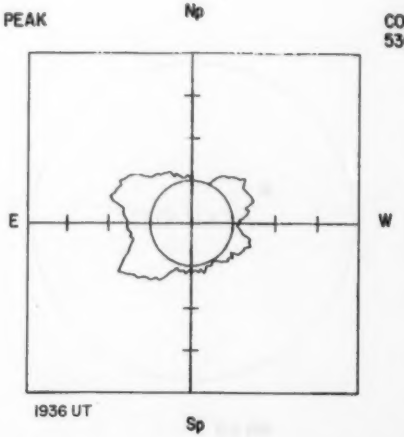


1900 UT

1-8Å FLUX (10^{-3} Wm^{-2})

SACRAMENTO PEAK

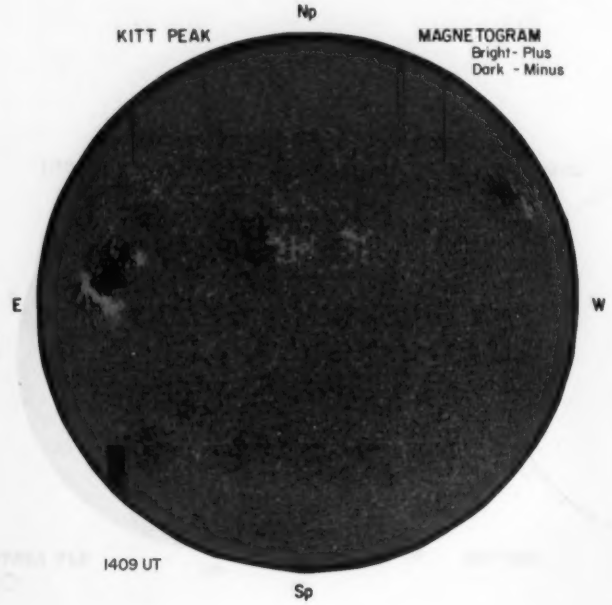
CORONA (1.15 $R_\odot$)
5303 Å



1936 UT

KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

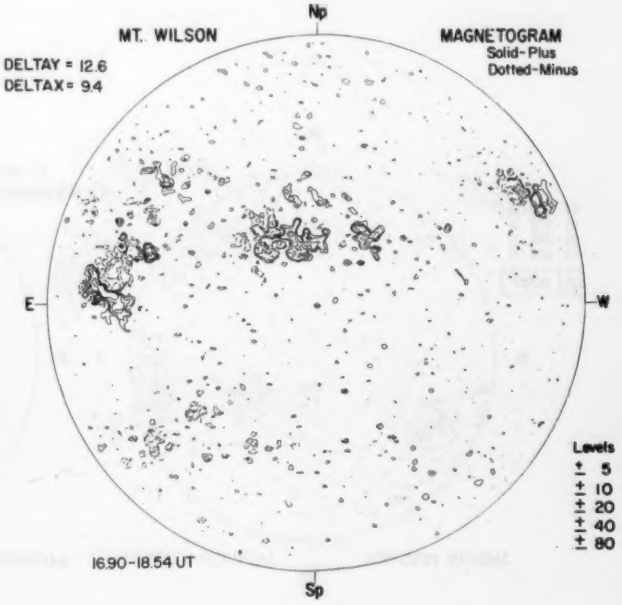


1409 UT

MT. WILSON

DELTAY = 12.6
DELTAX = 9.4

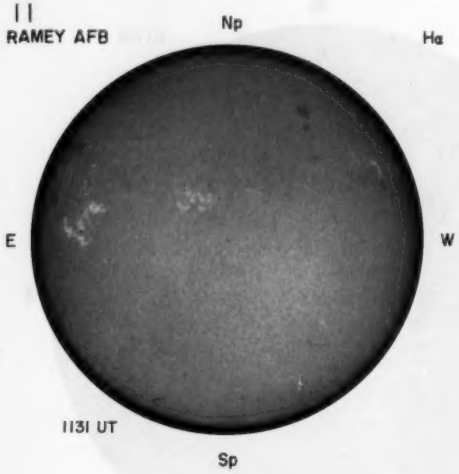
MAGNETOGRAM
Solid - Plus
Dotted - Minus



1690-1854 UT

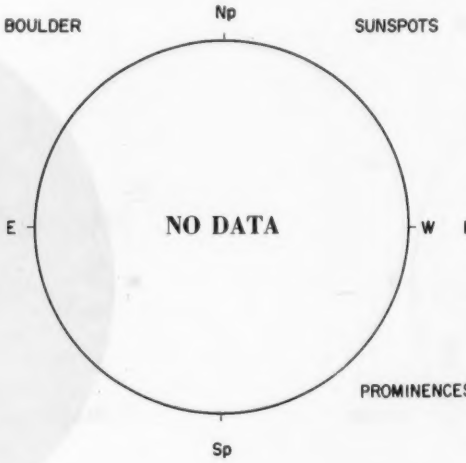
11

RAMEY AFB



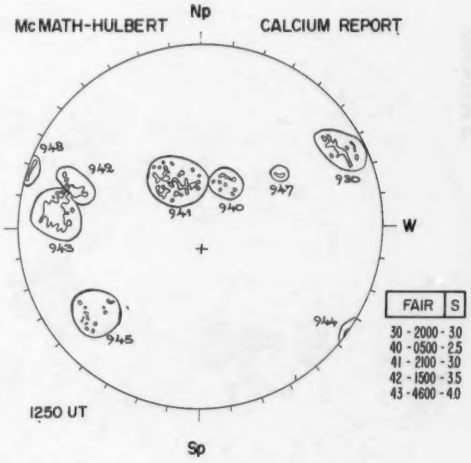
1131 UT

Hα BOULDER



SUNSPOTS

McMATH-HULBERT



1250 UT

CALCIUM REPORT

FAIR	S

30 - 2000 - 3.0
40 - 0500 - 2.5
41 - 2100 - 3.0
42 - 1500 - 3.5
43 - 4600 - 4.0

PROMINENCES

NOSC LA POSTA 2.0 CM

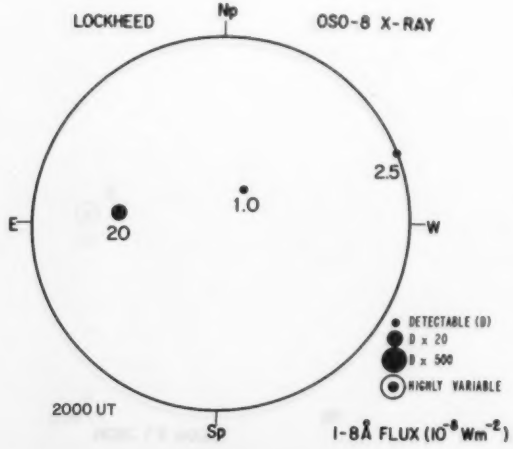
Ant. Temp. Unit 100°K

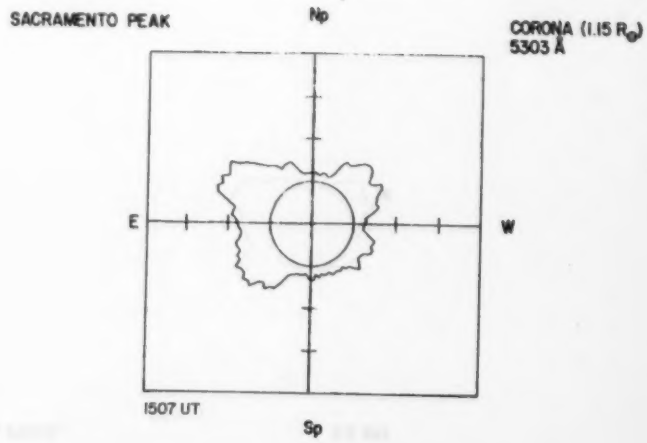
NOSC LA POSTA 8.6 MM

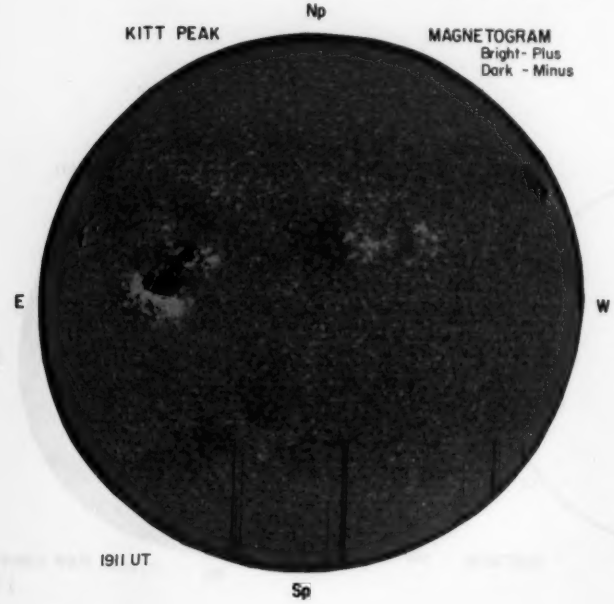
Ant. Temp. Unit 100°K

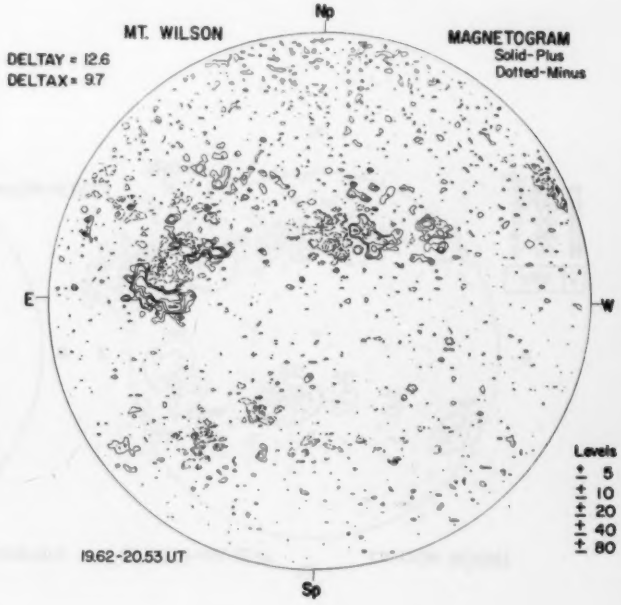
55
Sep 77

SEPTEMBER 12, 1977 (P = 23.53, B_0 = 7.24, L_0 = 243.90)



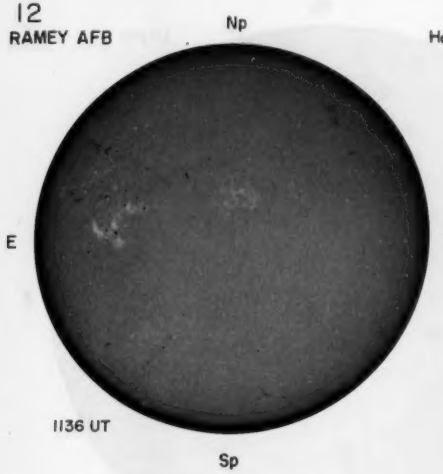






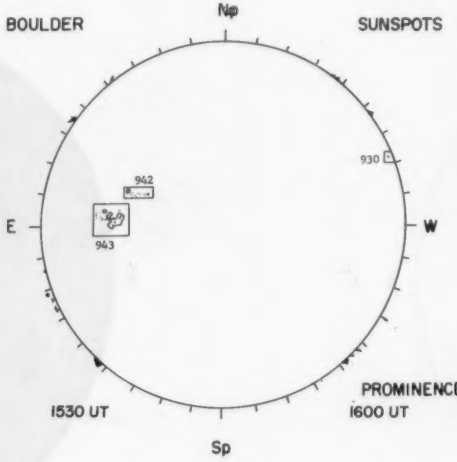
12

RAMEY AFB

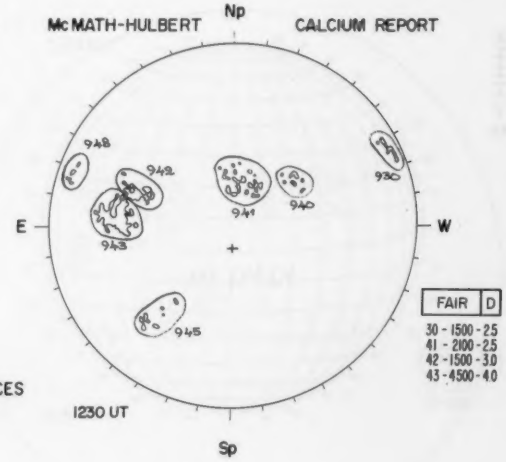


Hα

BOULDER



SUNSPOTS



McMATH-HULBERT

CALCIUM REPORT

FAIR	D

30 - 1500 - 2.5
41 - 2100 - 2.5
42 - 1500 - 3.0
43 - 4500 - 4.0

PROMINENCES

1600 UT

NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100°K

NOSC LA POSTA

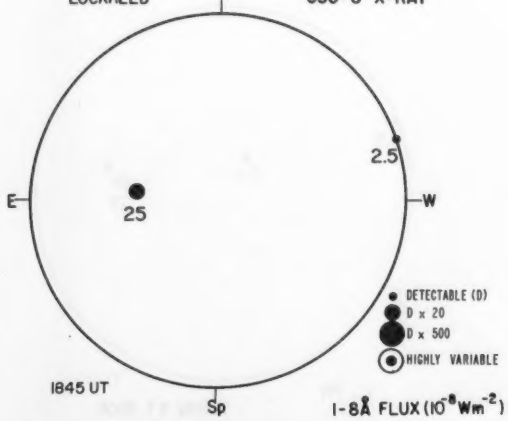
8.6 MM

Ant. Temp. Unit 100°K

57
Sep 77

SEPTEMBER 13, 1977 (P = 23.72, B_o = 7.23, L_o = 230.70)

LOCKHEED OSO-8 X-RAY

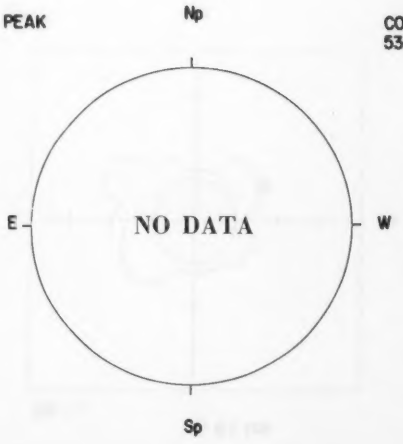


1845 UT

1-8Å FLUX (10^{-8} Wm^{-2})

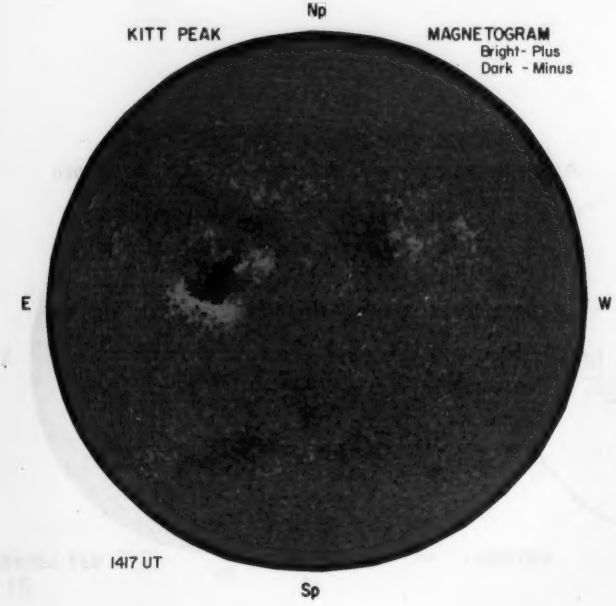
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

MAGNETOGRAM
Bright - Plus
Dark - Minus

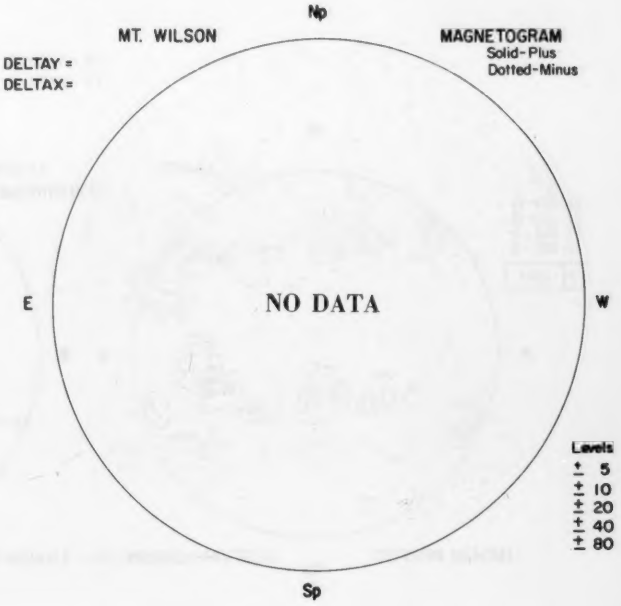


1417 UT

MT. WILSON

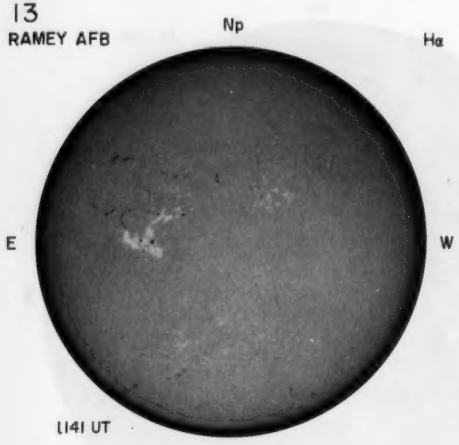
DELTAY =
DELTAX =

MAGNETOGRAM
Solid - Plus
Dotted - Minus



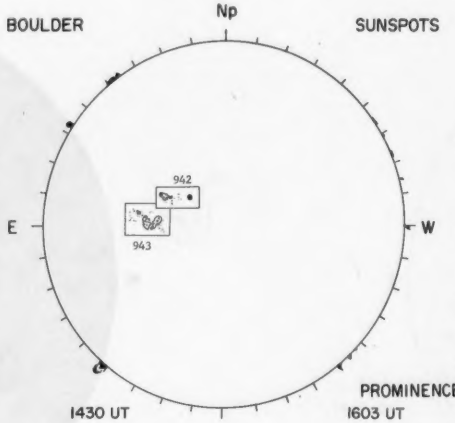
13

RAMEY AFB



1141 UT

Hα BOULDER



1430 UT

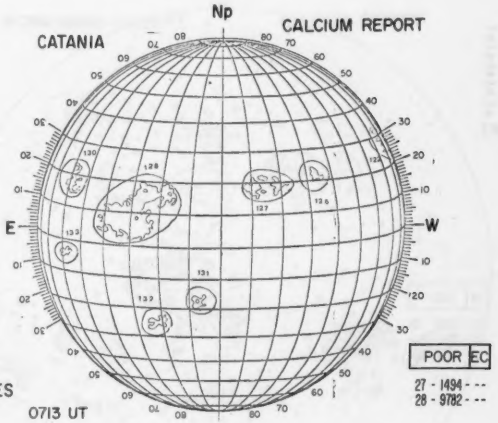
SUNSPOTS

PROMINENCES

1603 UT

CATANIA

CALCIUM REPORT



0713 UT

POOR EC

27 - 1494 - - -

28 - 9782 - - -

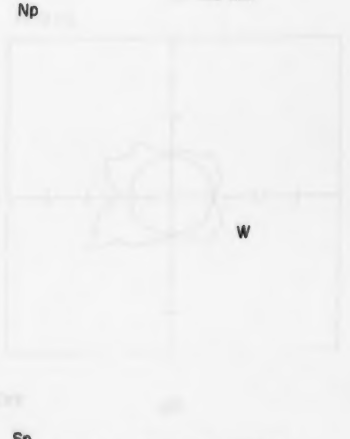
NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100°K

NOSC LA POSTA

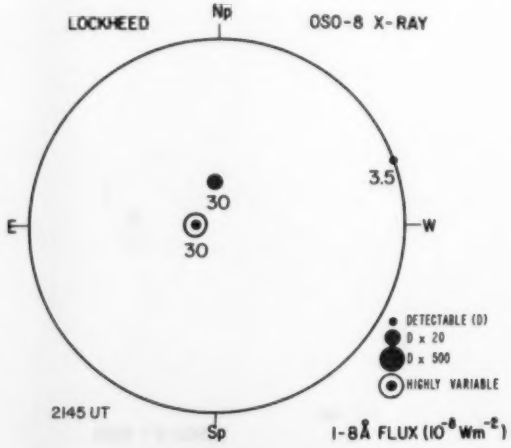
8.6 MM



Ant. Temp. Unit 100°K

SEPTEMBER 14, 1977 (P = 23.90, B_o = 7.21, L_o = 217.50)

LOCKHEED OSO-8 X-RAY

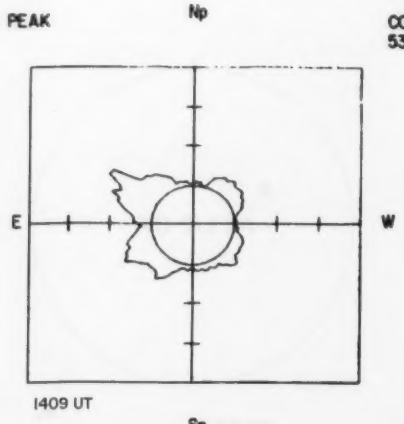


2145 UT

1-8Å FLUX (10^{-8} Wm^{-2})

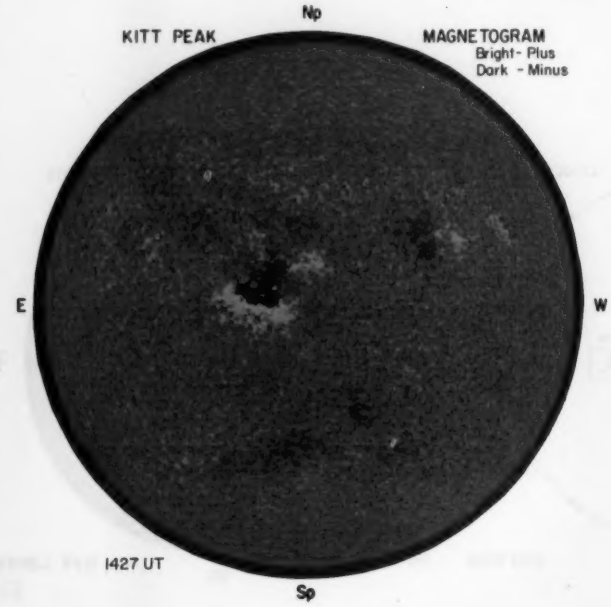
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



1409 UT

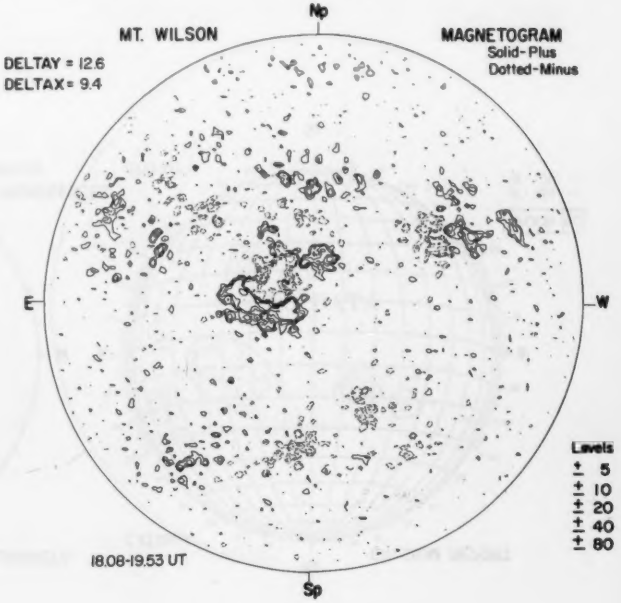
KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



1427 UT

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

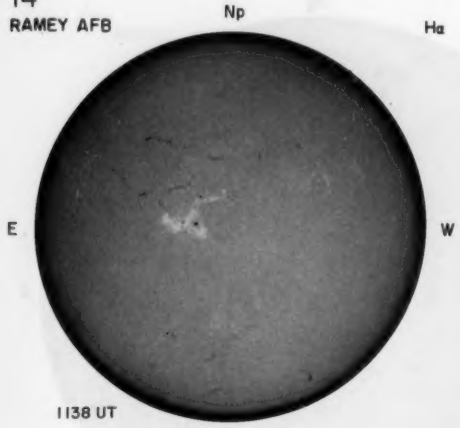
DELTAY = 12.6
DELTAX = 9.4



18.08-19.53 UT

14

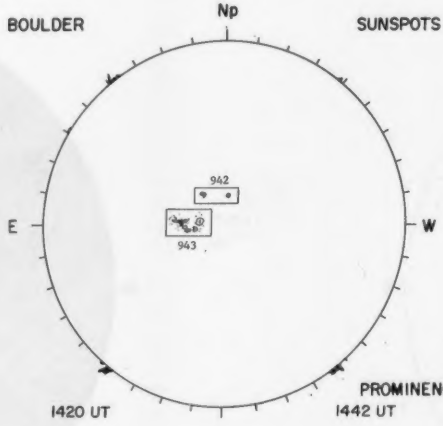
RAMEY AFB



1138 UT

Hα

BOULDER



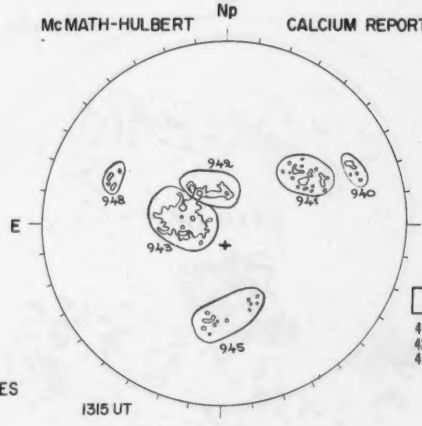
1420 UT

SUNSPOTS

PROMINENCES

1442 UT

McMATH-HULBERT



1315 UT

CALCIUM REPORT

FAIR	M

41 - 2000 - 3.0
42 - 1500 - 3.0
43 - 5000 - 4.0

NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100°K

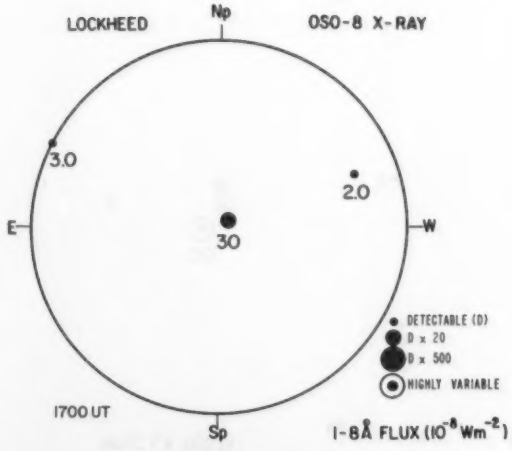
NOSC LA POSTA

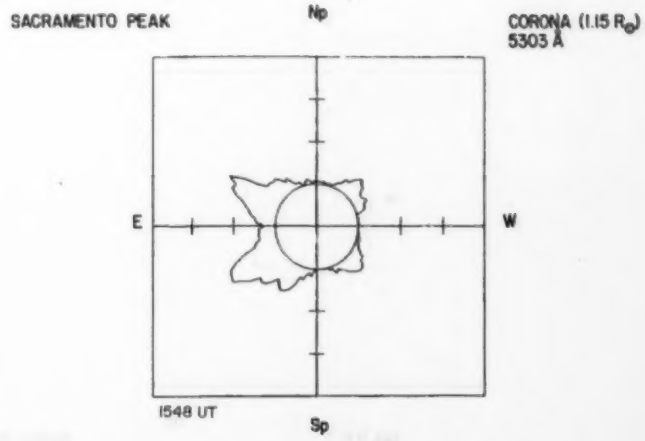
8.6 MM

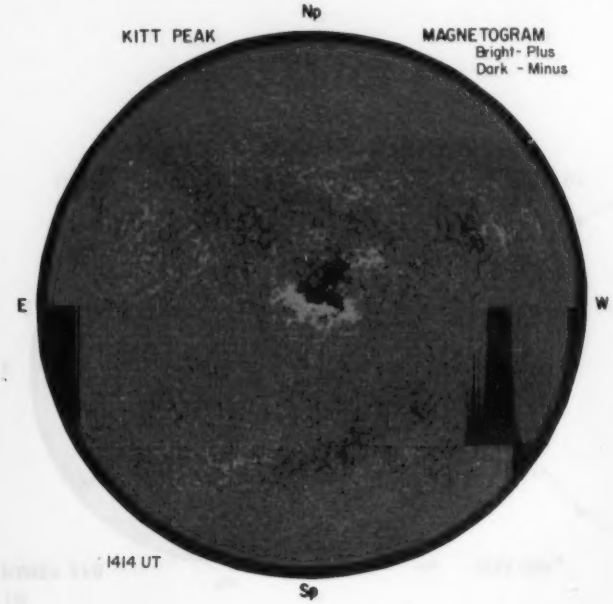
Ant. Temp. Unit 100°K

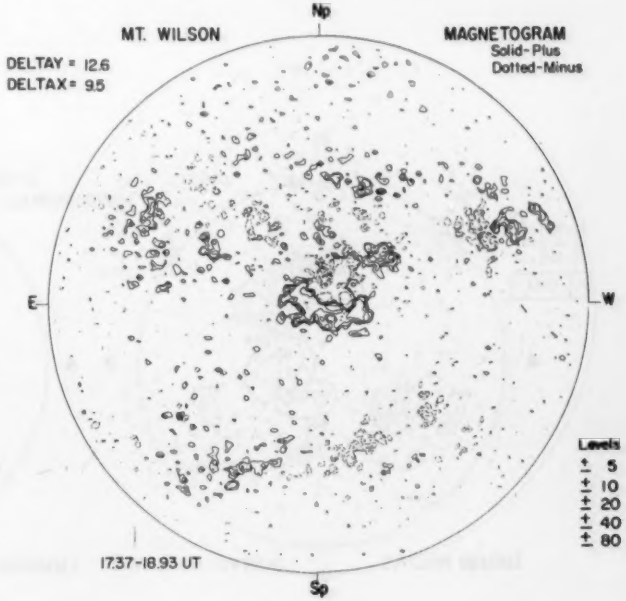
61
Sep 77

SEPTEMBER 15, 1977 (P = 24.08, B_o = 7.20, L_o = 204.30)







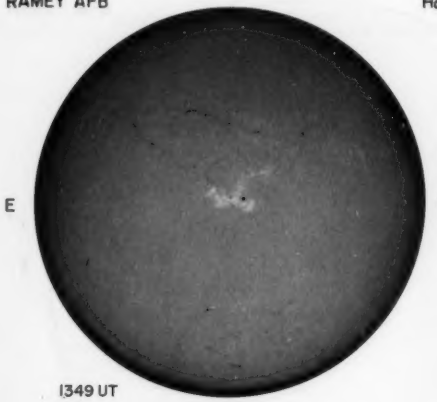


15

RAMEY AFB

Np

Hα



E

W

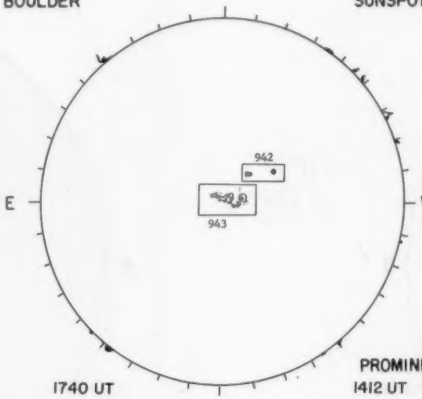
1349 UT

Sp

BOULDER

Np

SUNSPOTS



E

W

1740 UT

Sp

PROMINENCES

1412 UT

McMATH-HULBERT

Np

CALCIUM REPORT

E

W

Sp

NOSC LA POSTA

Np

2.0 CM

E

W

Sp

Ant. Temp. Unit 100°K

NOSC LA POSTA

Np

8.6 MM

E

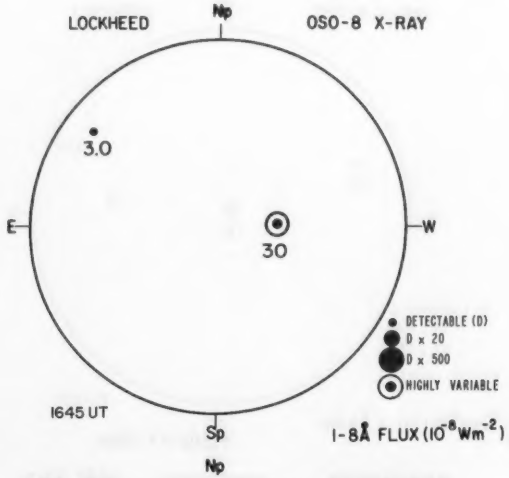
W

Sp

Ant. Temp. Unit 100°K

SEPTEMBER 16, 1977 (P = 24.24, B_o = 7.19, L_o = 191.10)

LOCKHEED OSO-8 X-RAY

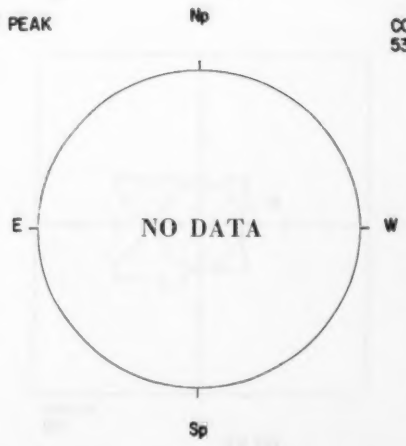


1645 UT

1-8Å FLUX (10^{-8} Wm^{-2})

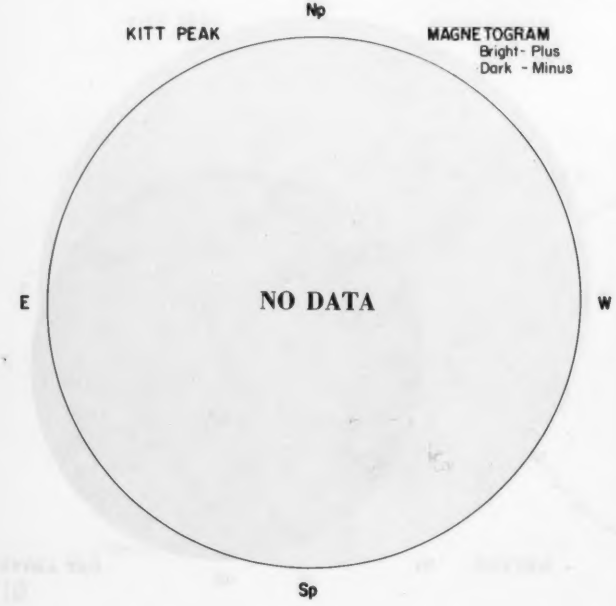
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK

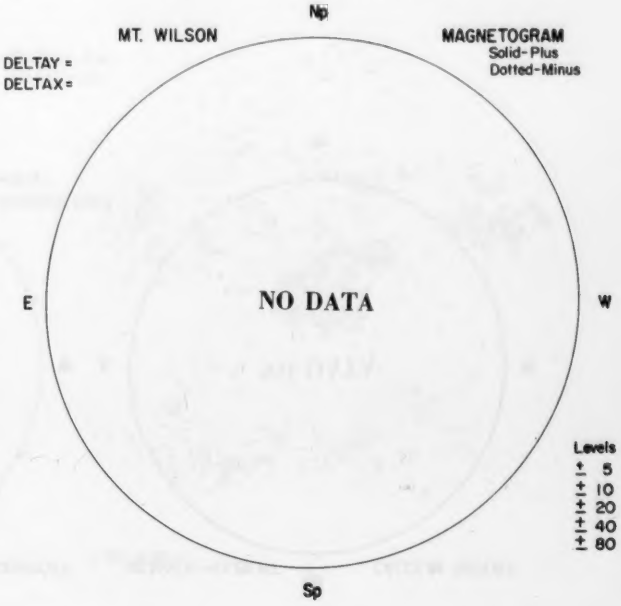
MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON

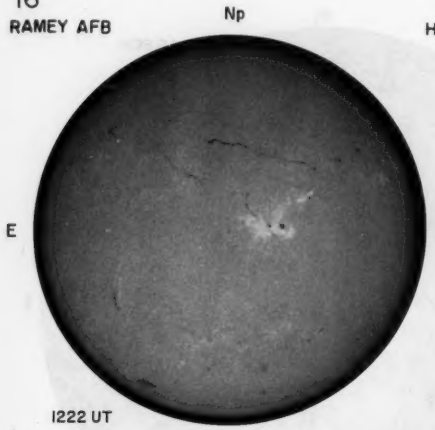
DELTAY =
DELTAX =

MAGNETOGRAM
Solid - Plus
Dotted - Minus



16

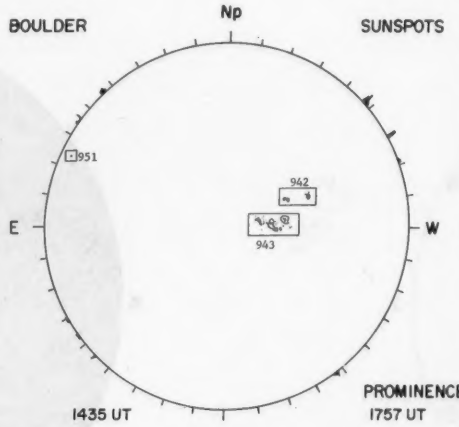
RAMEY AFB



1222 UT

Ha

BOULDER



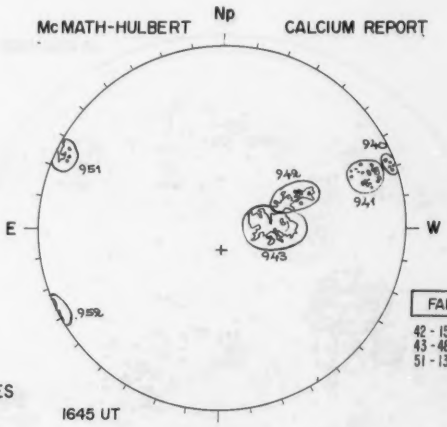
1435 UT

SUNSPOTS

PROMINENCES

1757 UT

McMATH-HULBERT



1645 UT

CALCIUM REPORT

FAIR	M

42 - 1500 - 3.0
43 - 4800 - 3.5
51 - 1300 - 2.5

NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100°K

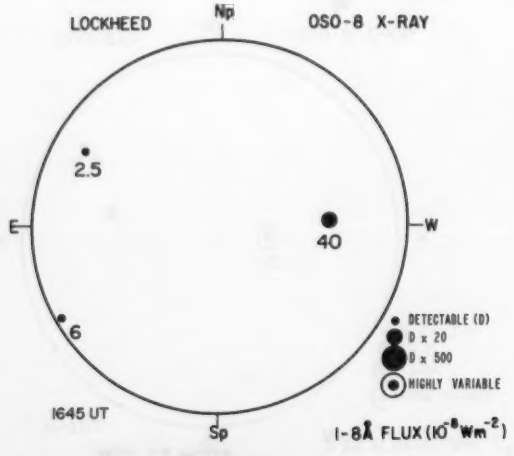
NOSC LA POSTA

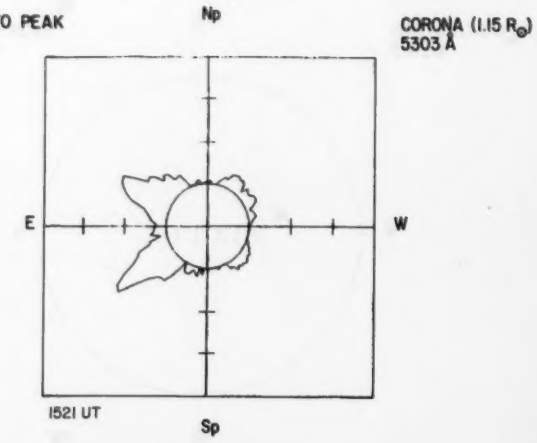
8.6 MM

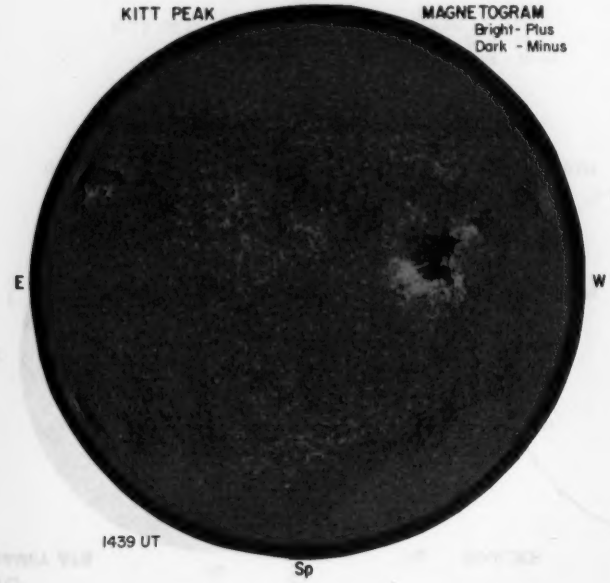
Ant. Temp. Unit 100°K

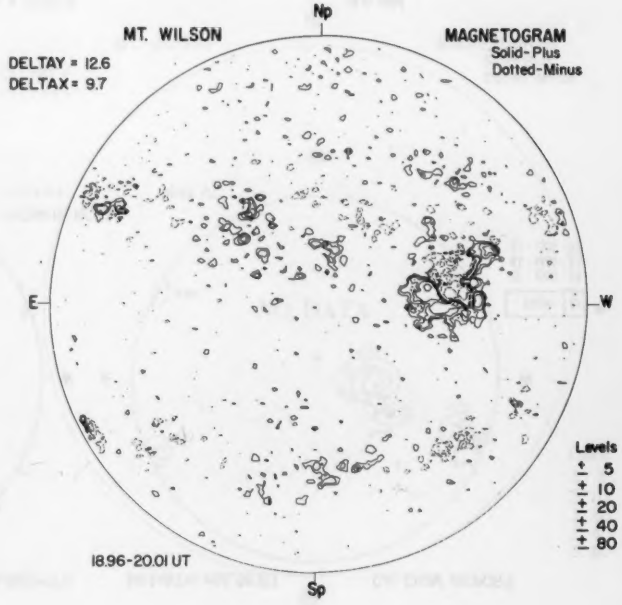
65
Sep 77

SEPTEMBER 17, 1977 (P = 24.41, B_o = 7.17, L_o = 177.89)



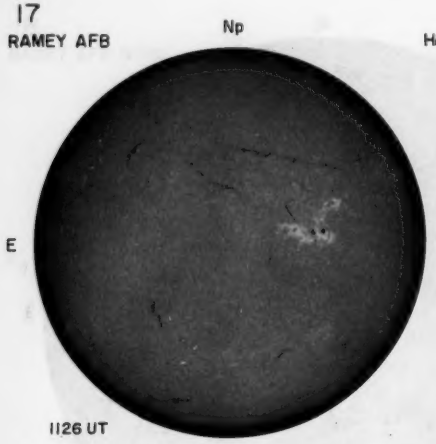






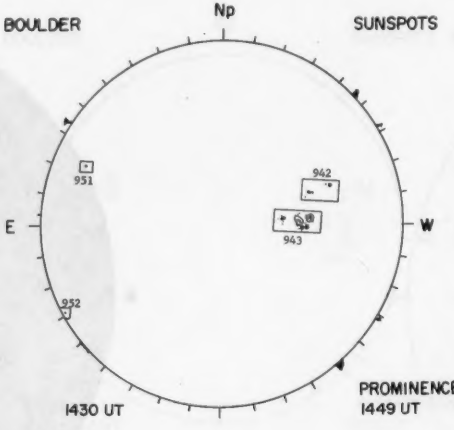
17

RAMEY AFB



1126 UT

Hα BOULDER



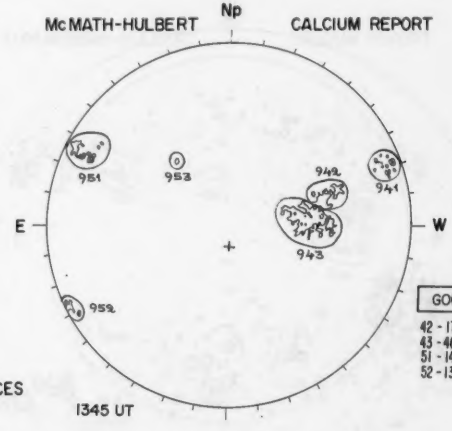
1430 UT

SUNSPOTS

PROMINENCES

1449 UT

McMATH-HULBERT



1345 UT

CALCIUM REPORT

GOOD	M
42 - 1700 - 3.0	
43 - 4600 - 3.5	
51 - 1400 - 3.0	
52 - 1300 - 3.5	

NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100°K

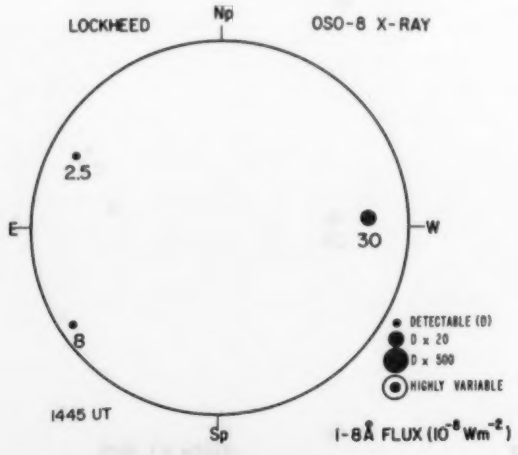
NOSC LA POSTA

8.6 MM

Ant. Temp. Unit 100°K

SEPTEMBER 18, 1977 (P = 24.56, B_0 = 7.15, L_0 = 164.69)

LOCKHEED OSO-8 X-RAY

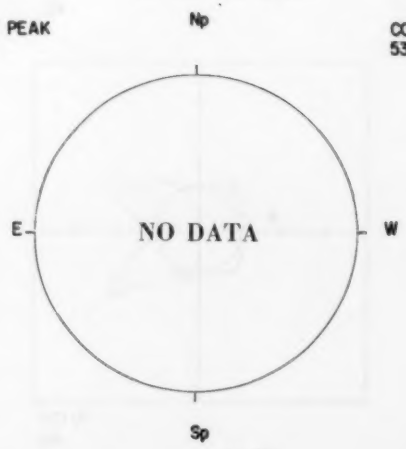


1445 UT

1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å

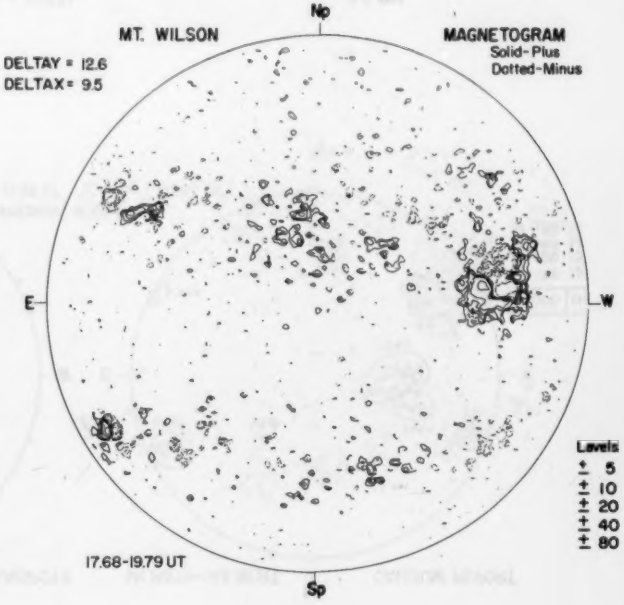


KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

1411 UT

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

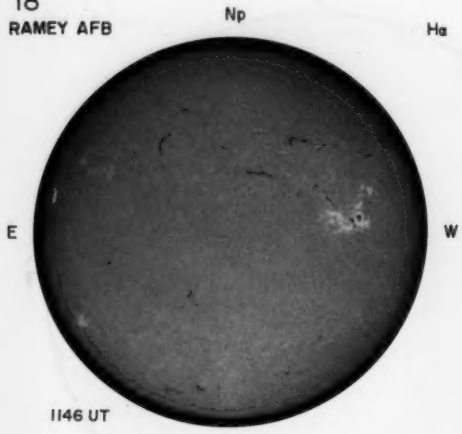
DELTAY = 12.6
DELTAX = 9.5



17.68-19.79 UT

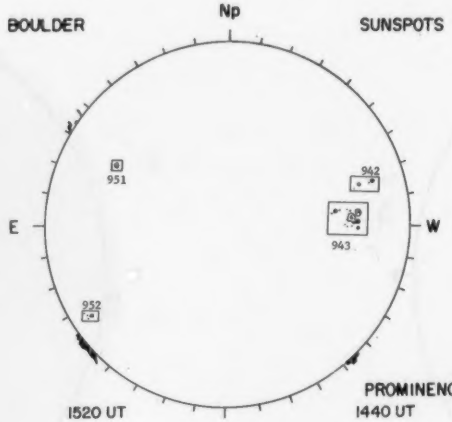
18

RAMEY AFB



1146 UT

Hα BOULDER



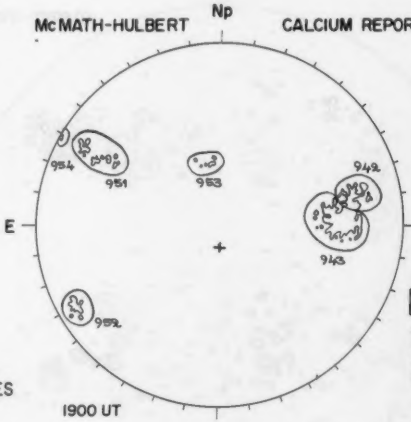
1520 UT

SUNSPOTS

PROMINENCES

1440 UT

McMATH-HULBERT



1900 UT

CALCIUM REPORT

FAIR	D

42 - 1800 - 3.0
43 - 4800 - 3.0
51 - 1200 - 2.5
52 - 1300 - 3.5

NOSC LA POSTA 2.0 CM

Ant. Temp. Unit 100°K

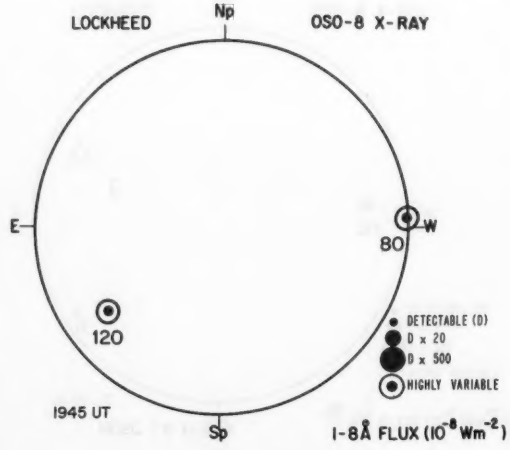
NOSC LA POSTA 8.6 MM

Ant. Temp. Unit 100°K

69
Sep 77

SEPTEMBER 19, 1977 (P = 24.72, B_o = 7.13, L_o = 151.49)

LOCKHEED OSO-8 X-RAY

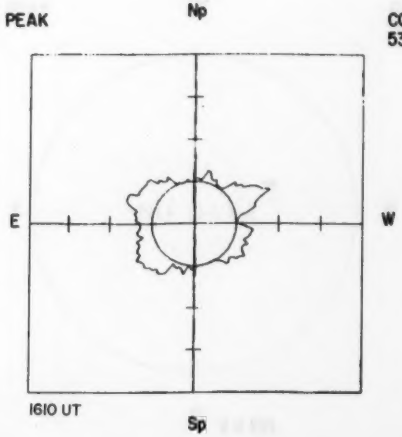


1945 UT

1-8Å FLUX (10^{-8} Wm^{-2})

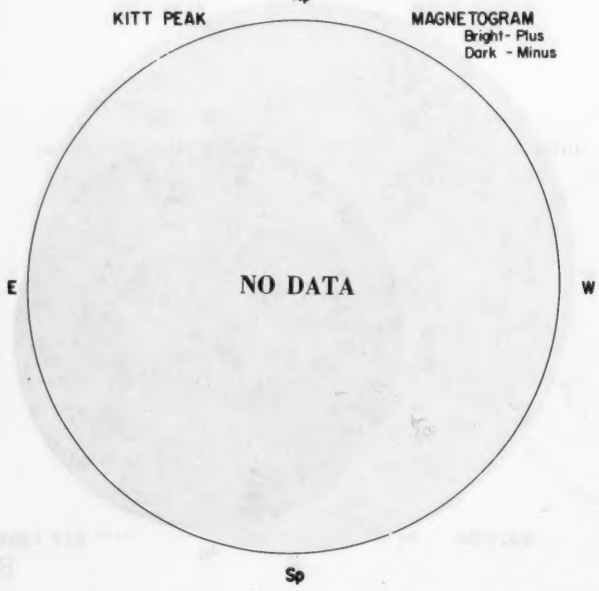
SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



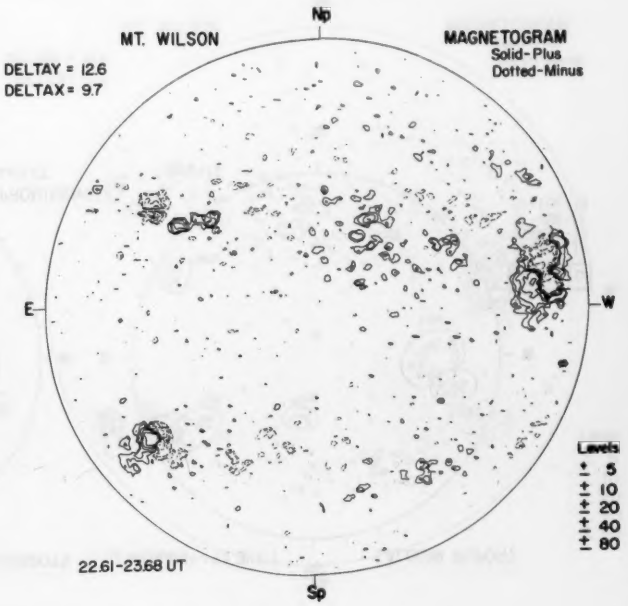
1610 UT

KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

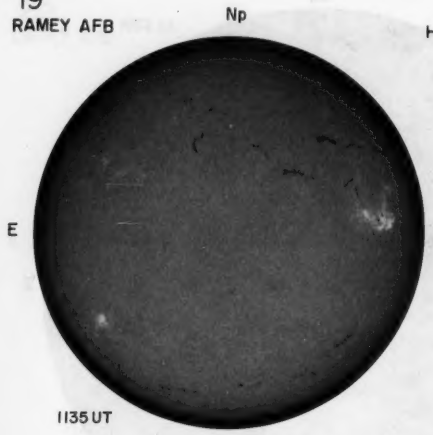
DELTAY = 12.6
DELTAX = 9.7



22.61-23.68 UT

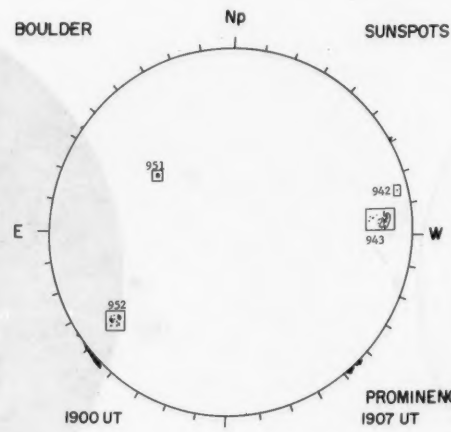
19

RAMEY AFB



1135 UT

Hα BOULDER



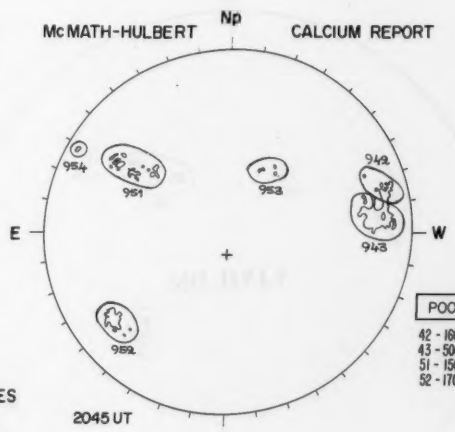
1900 UT

SUNSPOTS

PROMINENCES

1907 UT

McMATH-HULBERT



2045 UT

CALCIUM REPORT

POOR	S

42 - 1600 - 2.5
43 - 5000 - 3.0
51 - 1500 - 2.5
52 - 1700 - 3.5

NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100°K

NOSC LA POSTA

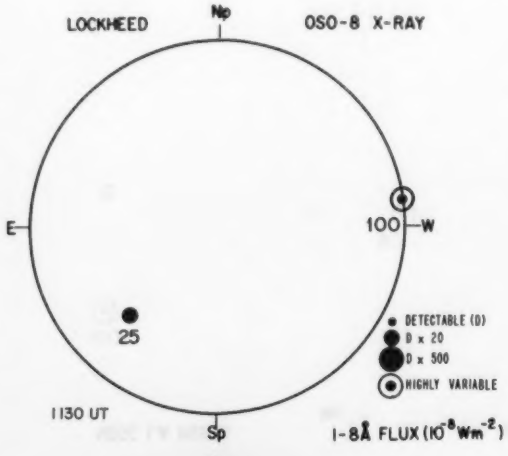
8.6 MM

Ant. Temp. Unit 100°K

71
Sep 77

SEPTEMBER 20, 1977 (P = 24.86, B_0 = 7.10, L_0 = 138.29)

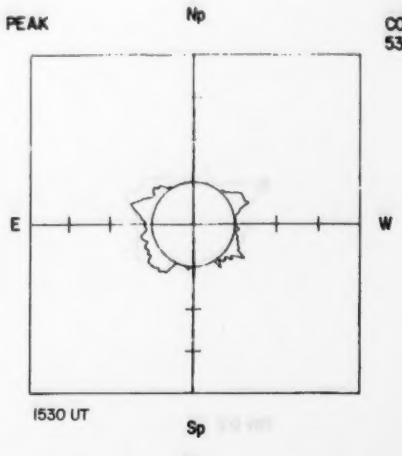
LOCKHEED OSO-8 X-RAY



1130 UT

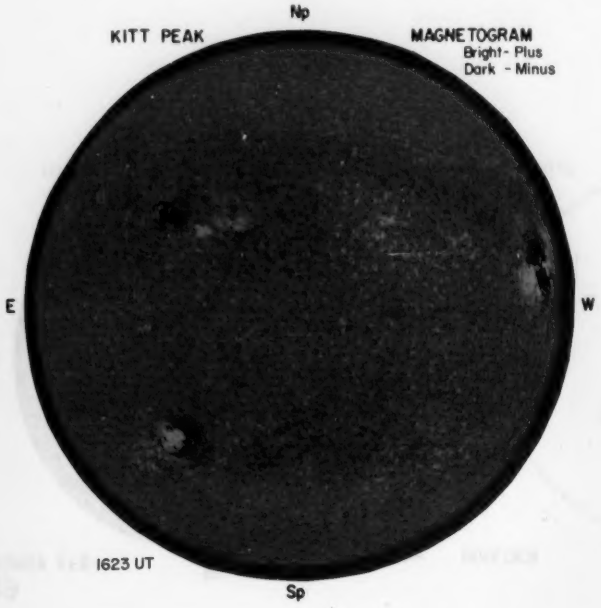
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å



1530 UT

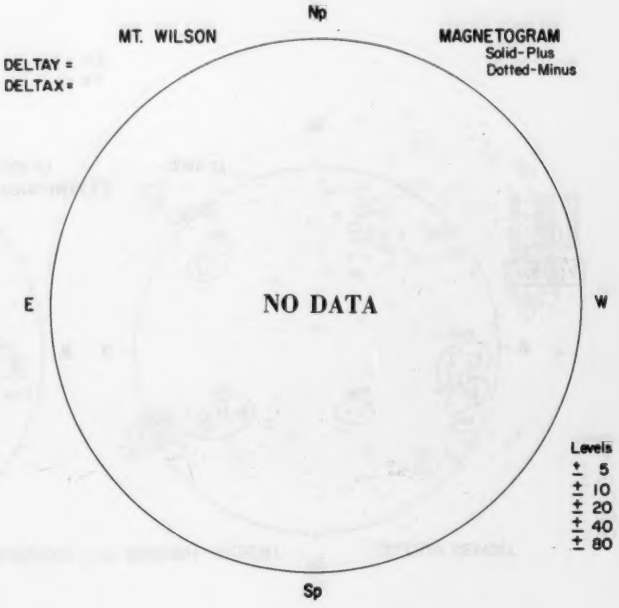
KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



1623 UT

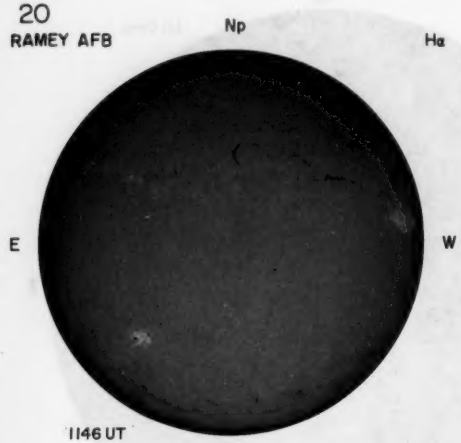
MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =



20

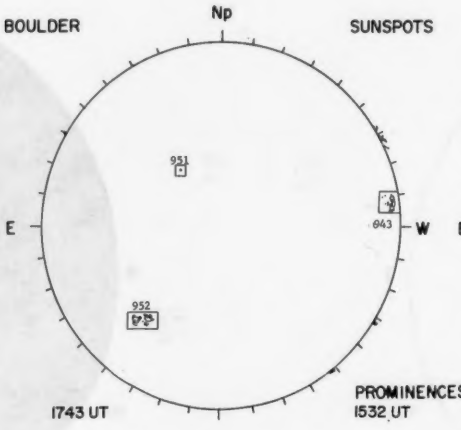
RAMEY AFB



1146 UT

BOULDER

SUNSPOTS



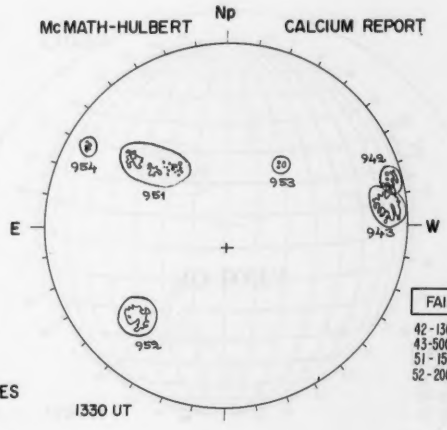
1743 UT

PROMINENCES

1532 UT

McMATH-HULBERT

CALCIUM REPORT



1330 UT

FAIR	M
42 - 1300 - 2.5	
43 - 5000 - 3.5	
51 - 1500 - 2.5	
52 - 2000 - 3.5	

NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100° K

NOSC LA POSTA

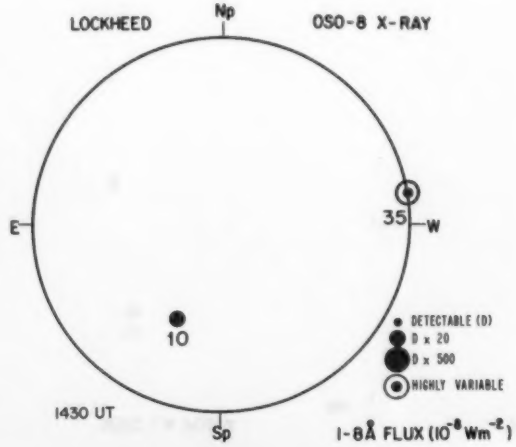
8.6 MM

Ant. Temp. Unit 100° K

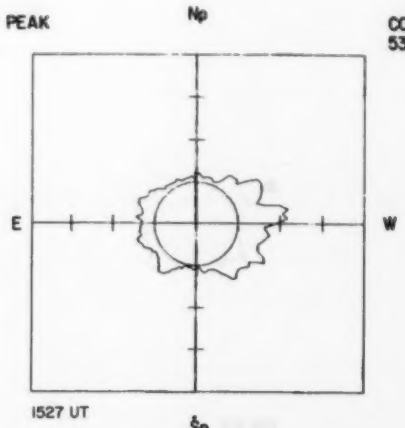
73
Sep 77

SEPTEMBER 21, 1977 (P = 25.00, B_o = 7.08, L_o = 125.09)

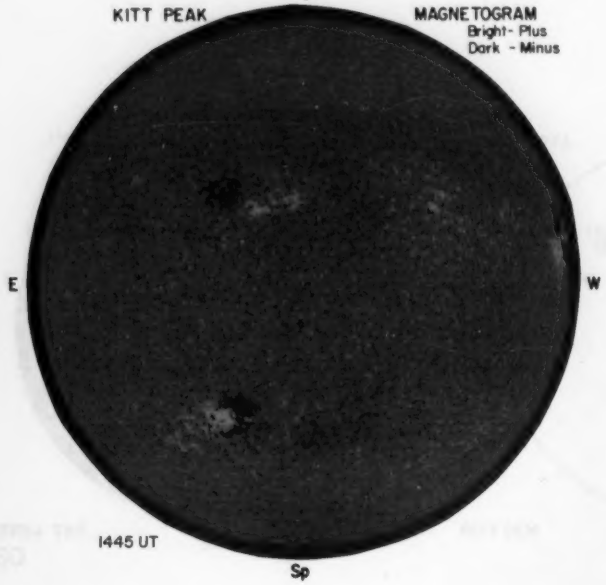
LOCKHEED OSO-8 X-RAY



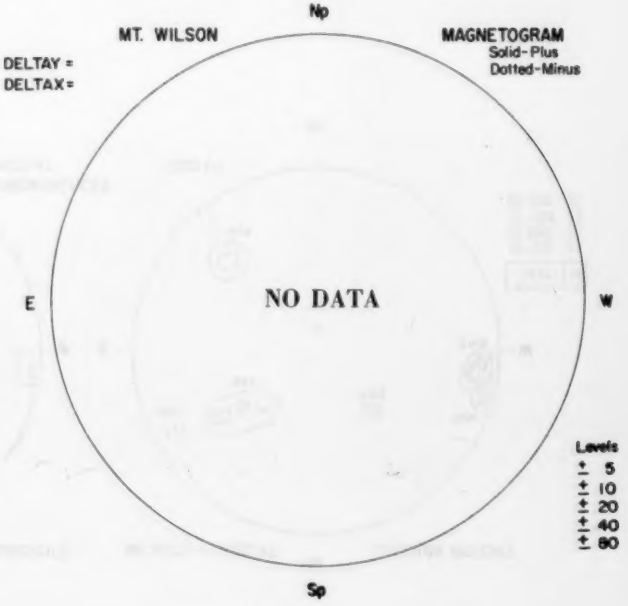
SACRAMENTO PEAK CORONA (1.15 $R_\odot$) 5303 Å



KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

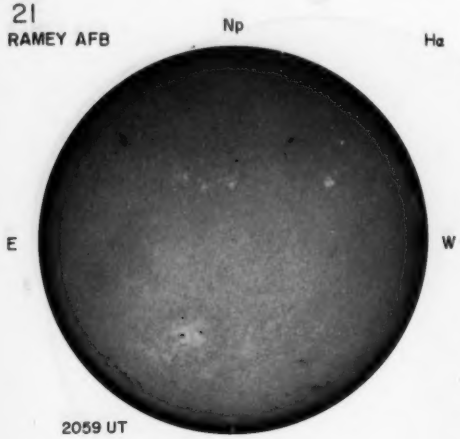


MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY =
DELTAX =



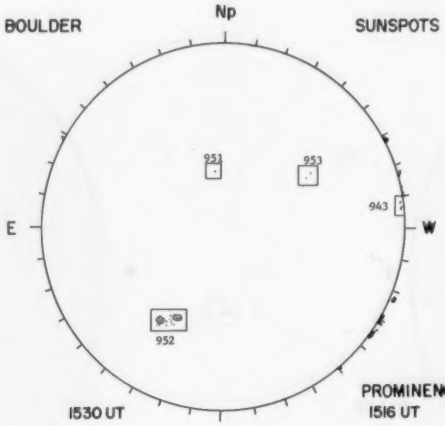
21

RAMEY AFB



2059 UT

Hα BOULDER



1530 UT

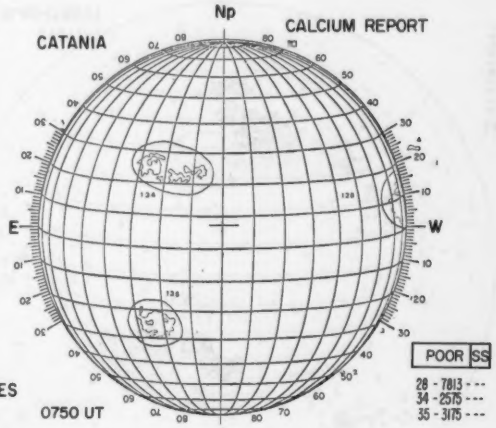
SUNSPOTS

PROMINENCES

1516 UT

CALCIUM REPORT

CATANIA



0750 UT

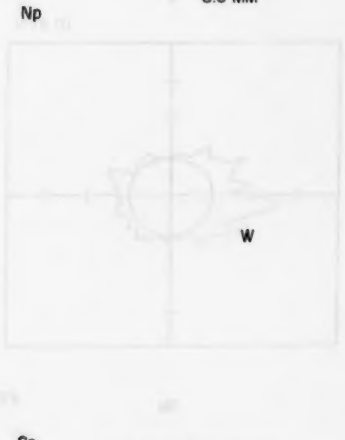
POOR SS

28 - 7813 ---
34 - 2575 ---
35 - 3175 ---

NOSC LA POSTA 2.0 CM

Ant. Temp. Unit 100°K

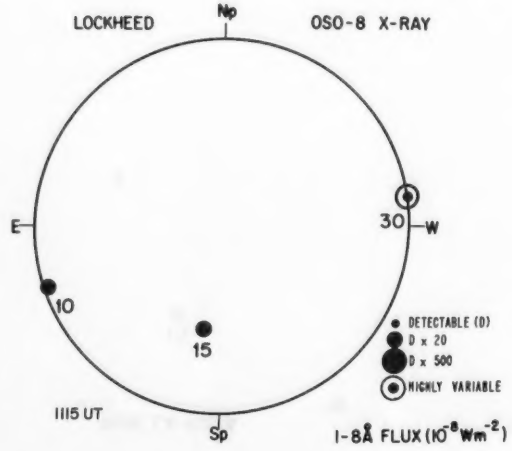
NOSC LA POSTA 8.6 MM

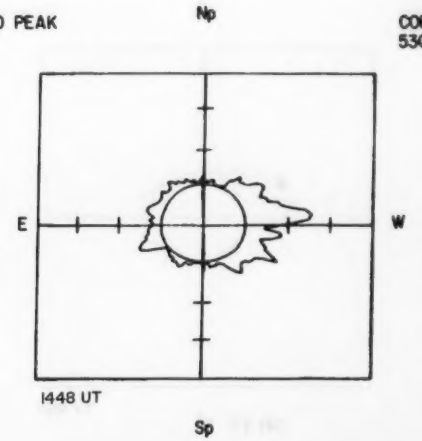


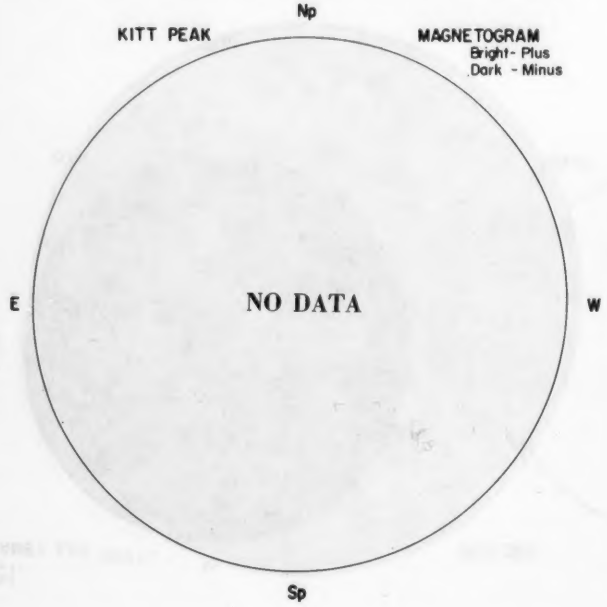
Ant. Temp. Unit 100°K

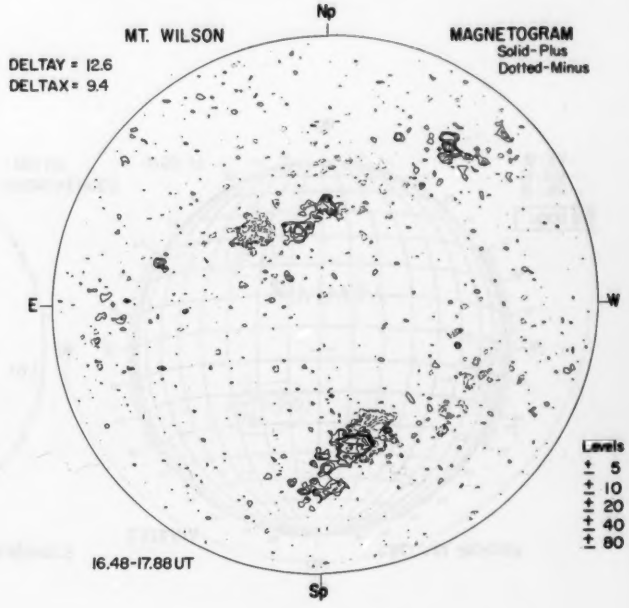
75
Sep 77

SEPTEMBER 22, 1977 (P = 25.13, B_o = 7.05, L_o = 111.89)



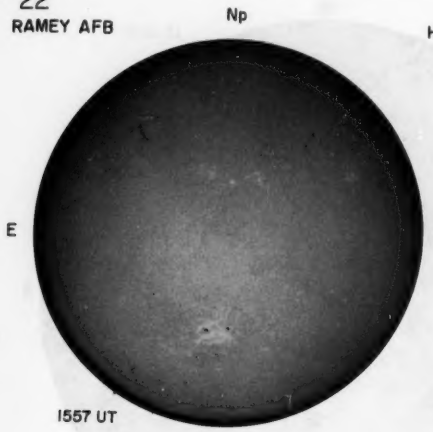






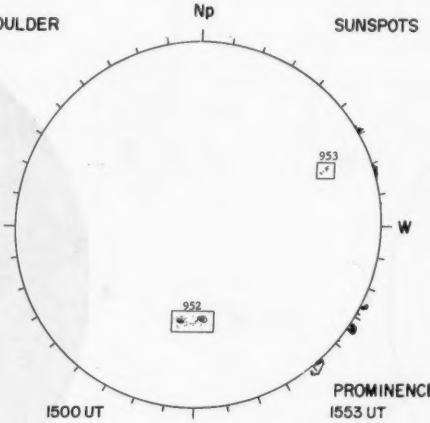
22

RAMEY AFB



1557 UT

Hα BOULDER



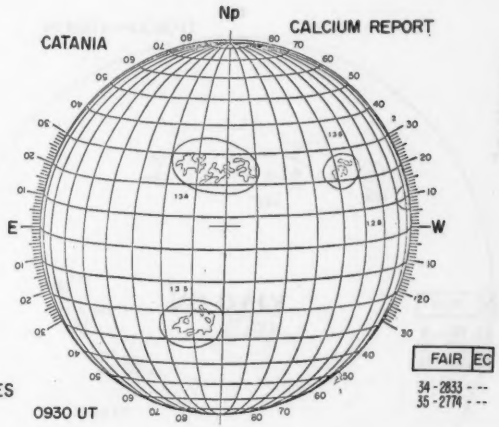
1500 UT

SUNSPOTS

PROMINENCES

1553 UT

CATANIA



0930 UT

CALCIUM REPORT

FAIR EC

34 - 2833 - - -

35 - 2774 - - -

NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100° K

NOSC LA POSTA

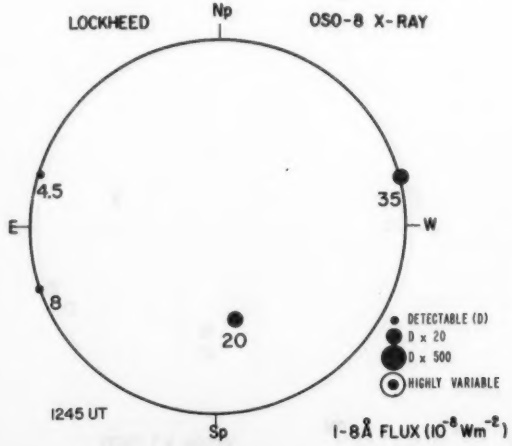
8.6 MM

Ant. Temp. Unit 100° K

77 Sep 77

SEPTEMBER 23, 1977 (P = 25.25, B_o = 7.02, L_o = 98.69)

LOCKHEED OSO-8 X-RAY

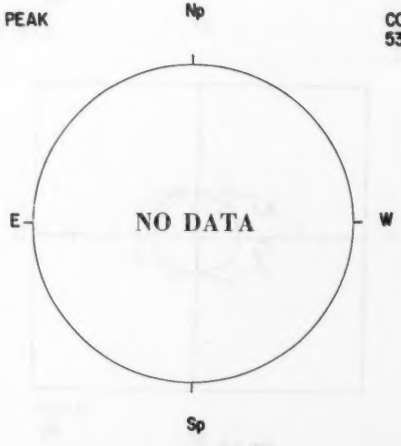


1245 UT

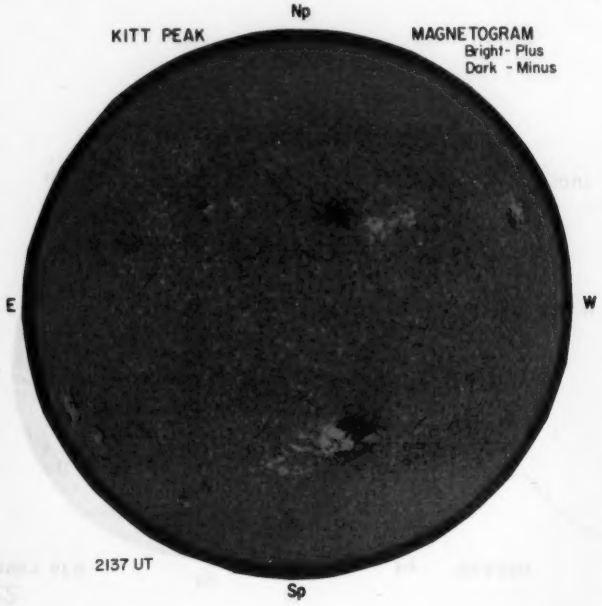
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å



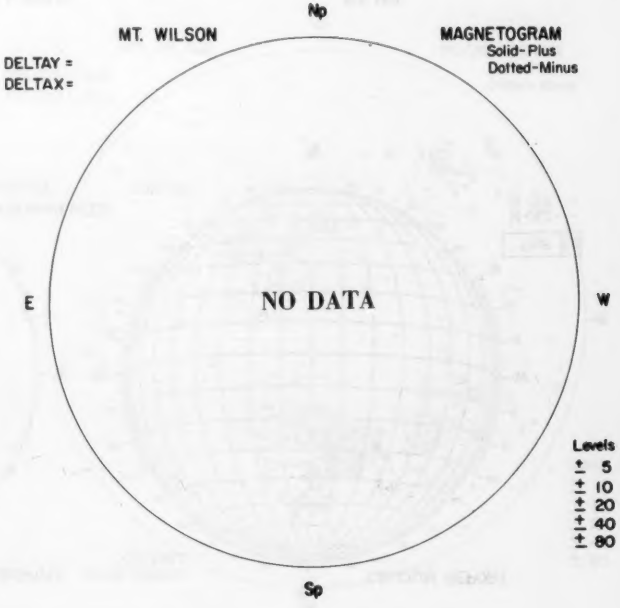
KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



2137 UT

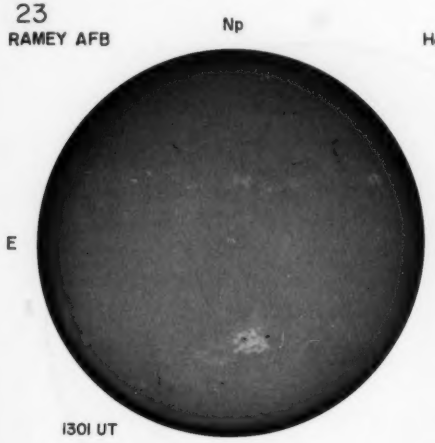
MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =



23

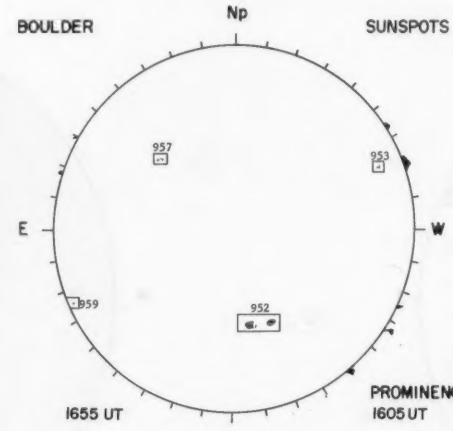
RAMEY AFB



1301 UT

Hα

BOULDER



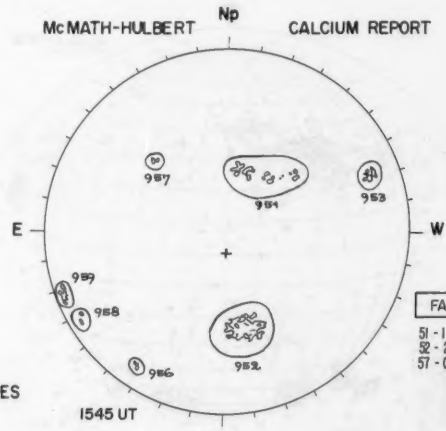
1655 UT

SUNSPOTS

PROMINENCES

1605 UT

McMATH-HULBERT



1545 UT

CALCIUM REPORT

FAIR M

51 - 1100 - 2.5
52 - 2700 - 3.0
57 - 0200 - 2.5

NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100°K

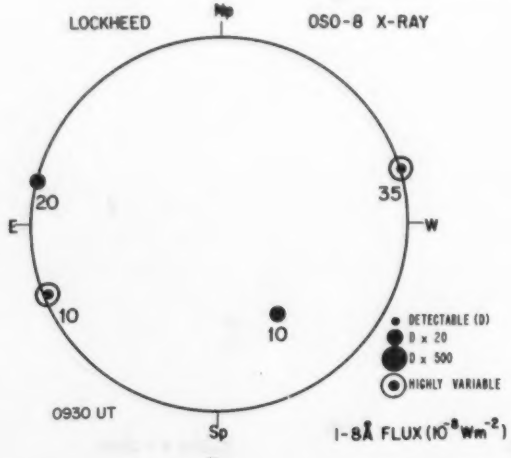
NOSC LA POSTA

8.6 MM

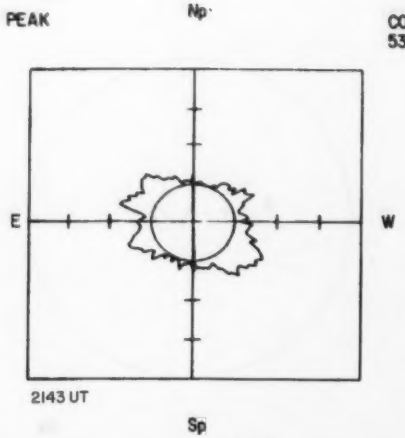
Ant. Temp. Unit 100°K

SEPTEMBER 24, 1977 (P = 25.37, B_o = 6.99, L_o = 85.50)

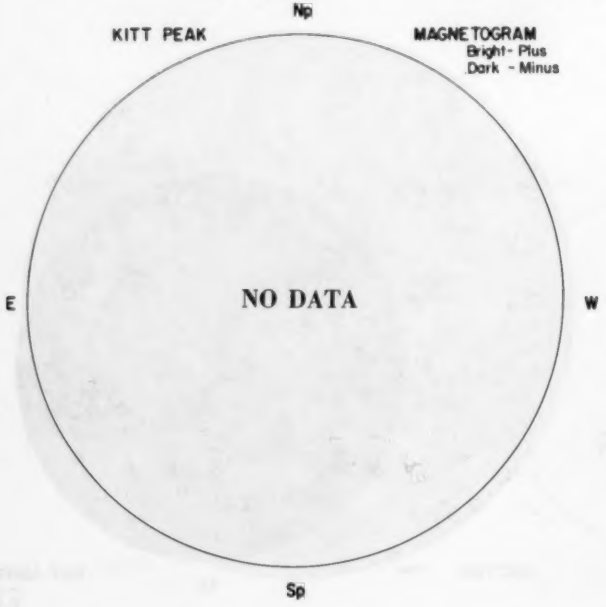
LOCKHEED OSO-8 X-RAY



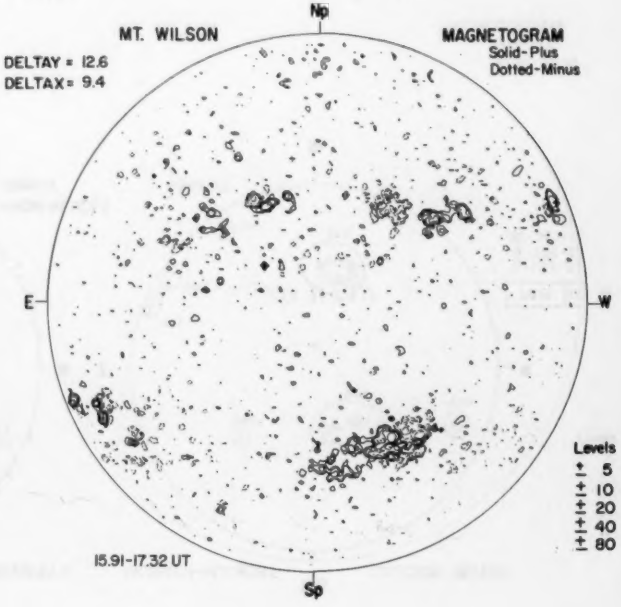
SACRAMENTO PEAK



KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

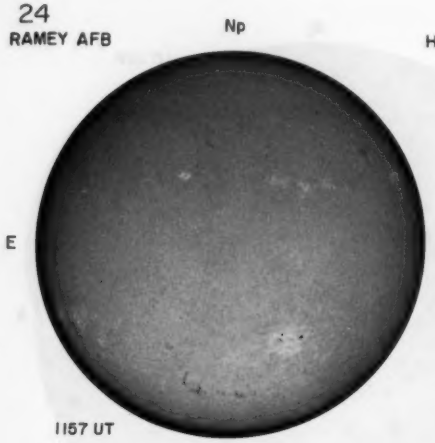


MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.6
DELTAX = 9.4



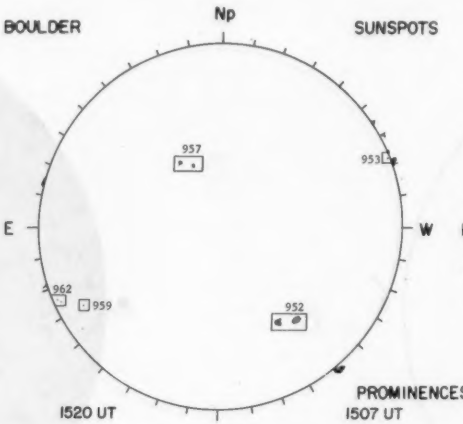
24

RAMEY AFB



1157 UT

Ha BOULDER



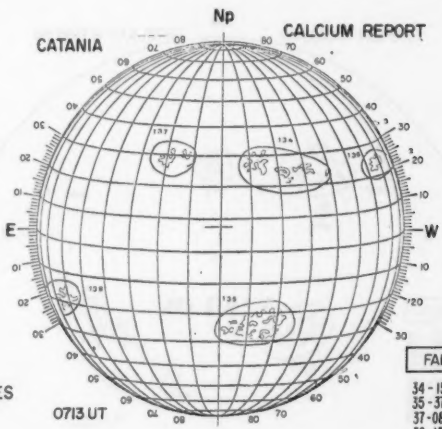
1520 UT

SUNSPOTS

PROMINENCES

1507 UT

CATANIA



0713 UT

CALCIUM REPORT

FAIR	EC

34 - 1578 - --
35 - 3767 - --
37 - 0800 - --
38 - 1552 - --

NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100° K

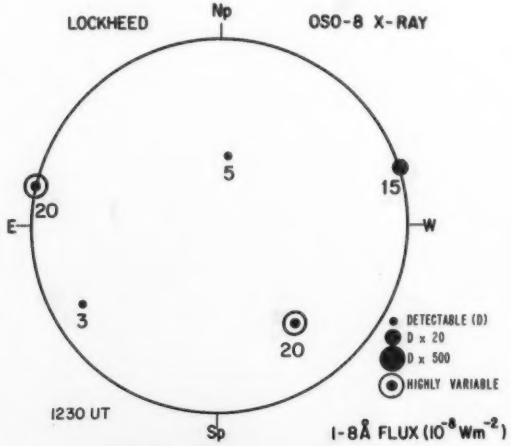
NOSC LA POSTA

8.6 MM

Ant. Temp. Unit 100° K

SEPTEMBER 25, 1977 (P = 25.48, B_o = 6.95, L_o = 72.30)

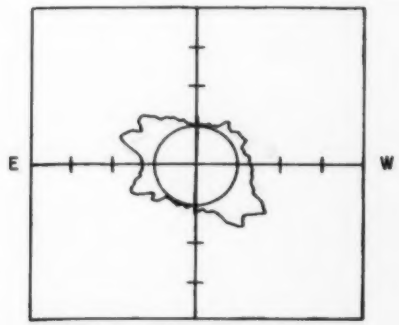
LOCKHEED OSO-8 X-RAY



1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

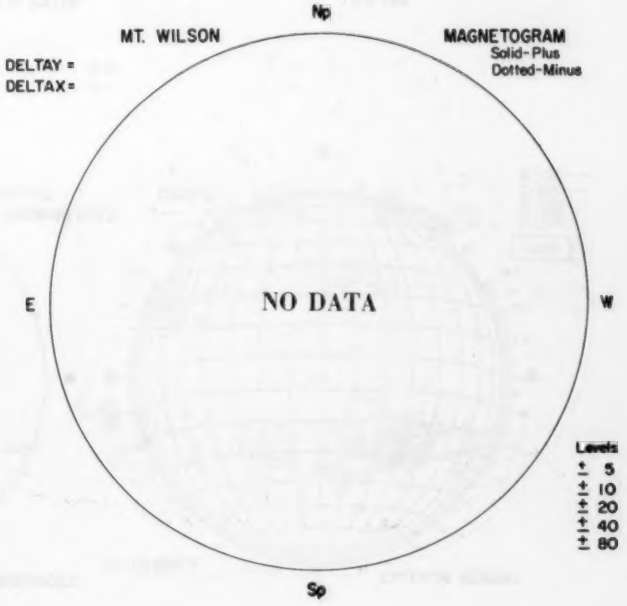
CORONA (1.15 $R_\odot$)
5303 Å



KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY =
DELTAX =

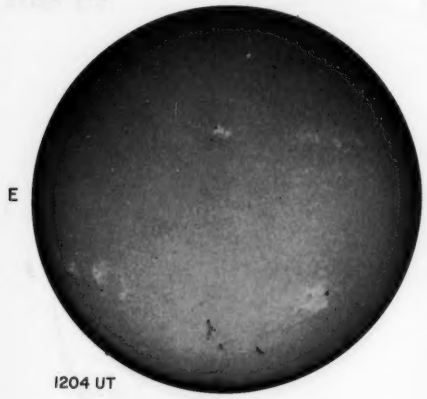


25

RAMEY AFB

Np

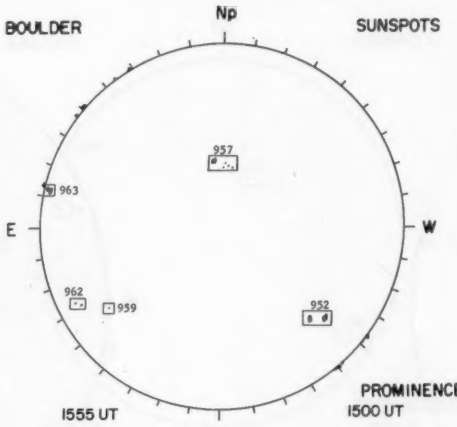
Hα



1204 UT

BOULDER

SUNSPOTS



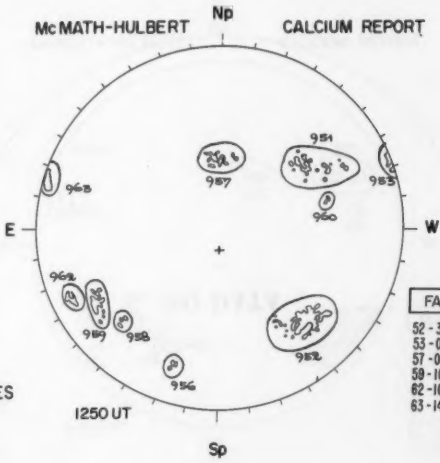
1555 UT

PROMINENCES

1500 UT

McMATH-HULBERT

CALCIUM REPORT



1250 UT

FAIR	S
52 - 3100 - 30	
53 - 0500 - 25	
57 - 0600 - 30	
59 - 1000 - 30	
62 - 1000 - 30	
63 - 1400 - 40	

NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100°K

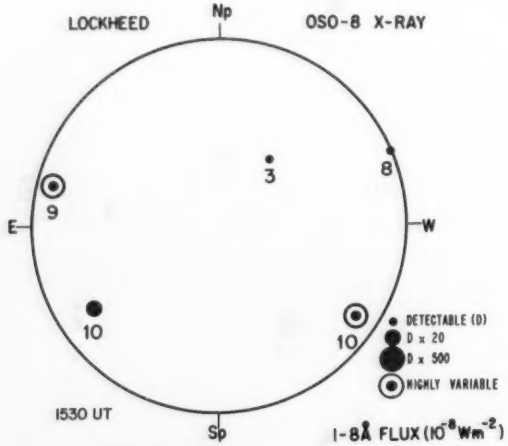
NOSC LA POSTA

8.6 MM

Ant. Temp. Unit 100°K

SEPTEMBER 26, 1977 (P = 25.59, B_o = 6.92, L_o = 59.10)

LOCKHEED OSO-8 X-RAY

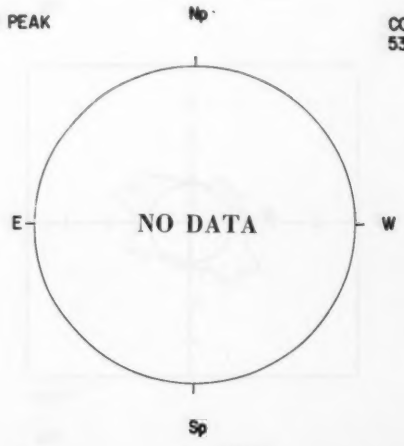


1530 UT

1-8Å FLUX (10^{-8} Wm^{-2})

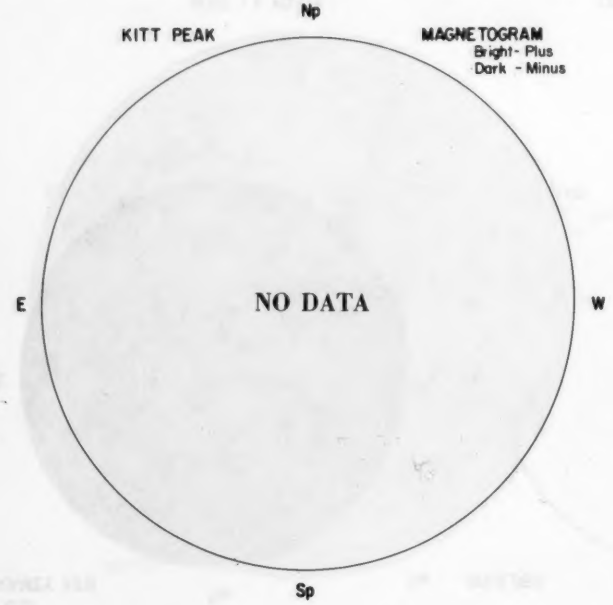
SACRAMENTO PEAK

CORONA (1.15 R_o)
5303 Å



KITT PEAK

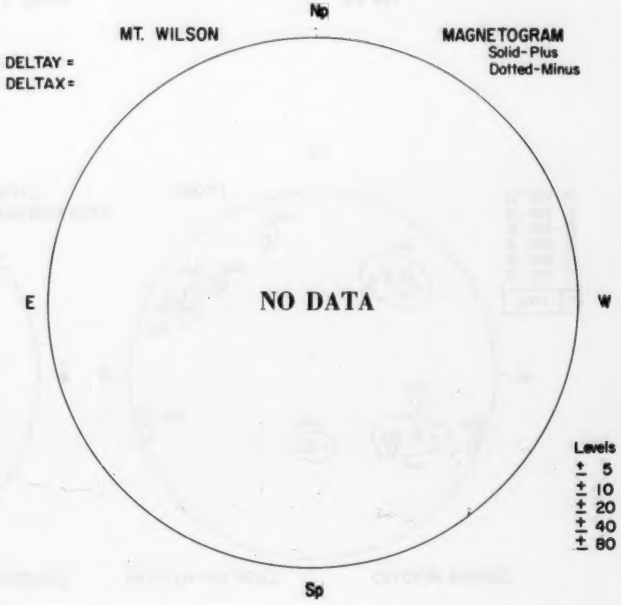
MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON

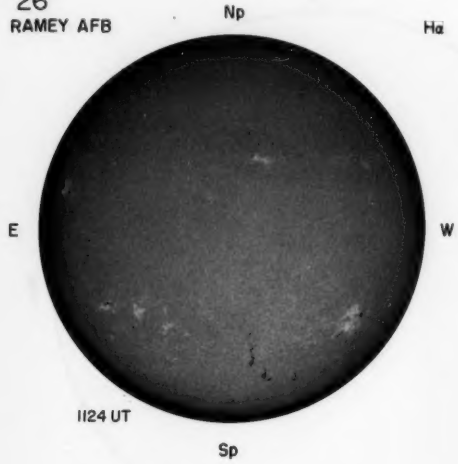
DELTAY =
DELTAX =

MAGNETOGRAM
Solid - Plus
Dotted - Minus



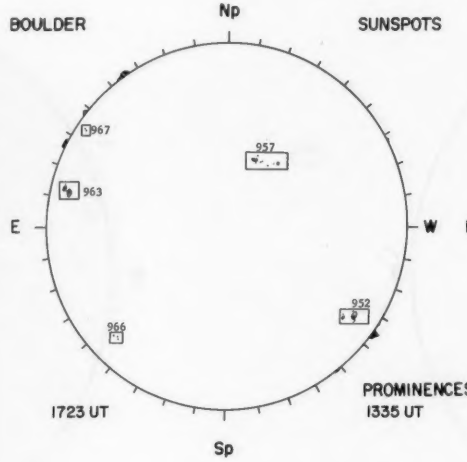
26

RAMEY AFB



1124 UT

Hα BOULDER



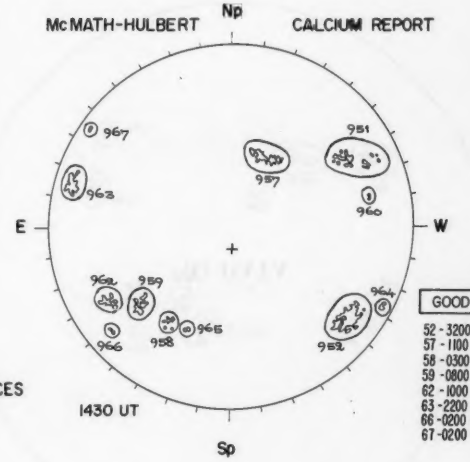
1723 UT

SUNSPOTS

PROMINENCES

1335 UT

McMATH-HULBERT



1430 UT

CALCIUM REPORT

GOOD	M

52 - 3200 - 3.0
57 - 1100 - 3.0
58 - 0300 - 2.5
59 - 0800 - 3.0
62 - 1000 - 3.0
63 - 2200 - 4.0
66 - 0200 - 3.0
67 - 0200 - 3.5

NOSC LA POSTA 2.0 CM

Ant. Temp. Unit 100°K

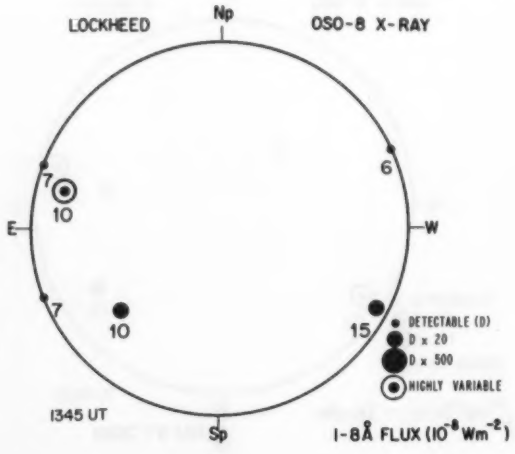
NOSC LA POSTA 8.6 MM

Ant. Temp. Unit 100°K

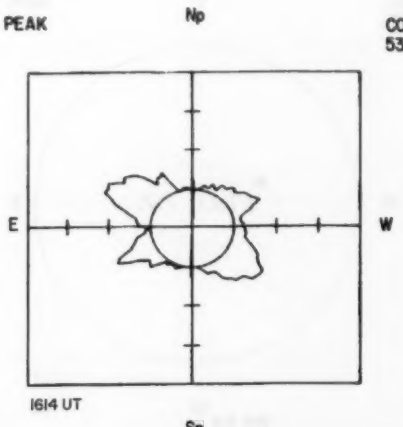
85
Sep 77

SEPTEMBER 27, 1977 (P = 25.68, B_o = 6.88, L_o = 45.90)

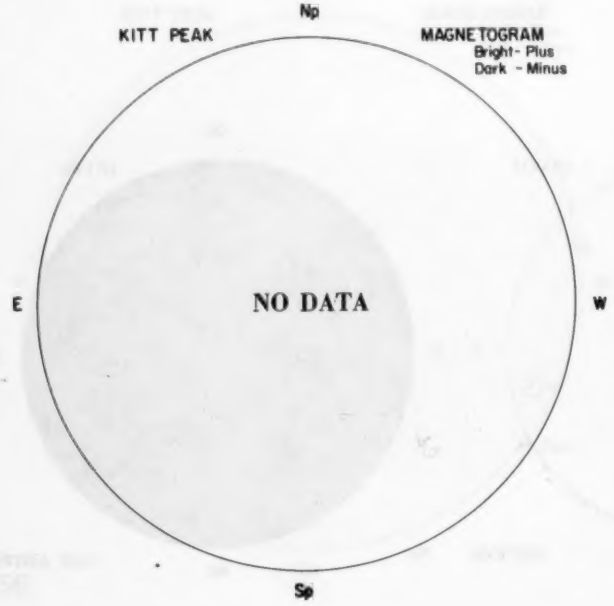
LOCKHEED OSO-8 X-RAY



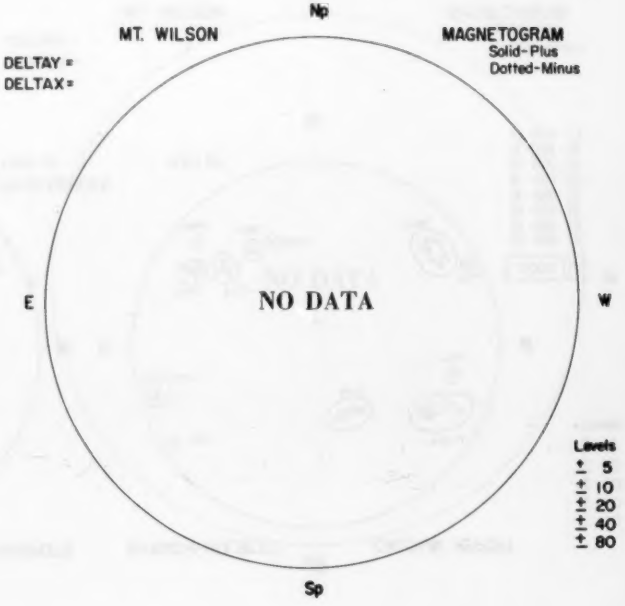
SACRAMENTO PEAK



KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY =
DELTAX =

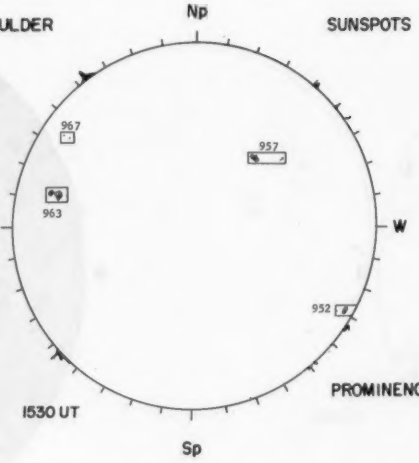


27

RAMEY AFB

Hα

BOULDER

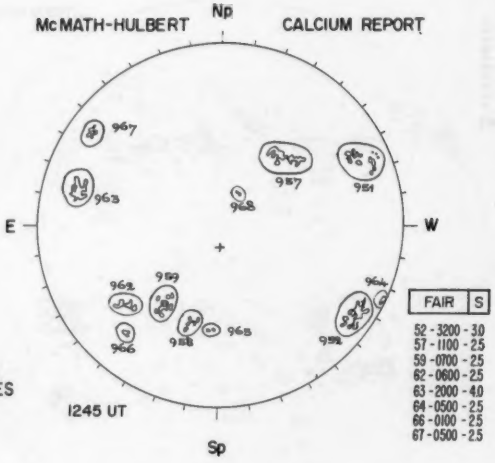


SUNSPOTS

PROMINENCES

McMATH-HULBERT

CALCIUM REPORT



FAIR	S
52 - 3200 - 3.0	
57 - 1100 - 2.5	
59 - 0700 - 2.5	
62 - 0600 - 2.5	
63 - 2000 - 4.0	
64 - 0500 - 2.5	
66 - 0100 - 2.5	
67 - 0500 - 2.5	

NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100°K

NOSC LA POSTA

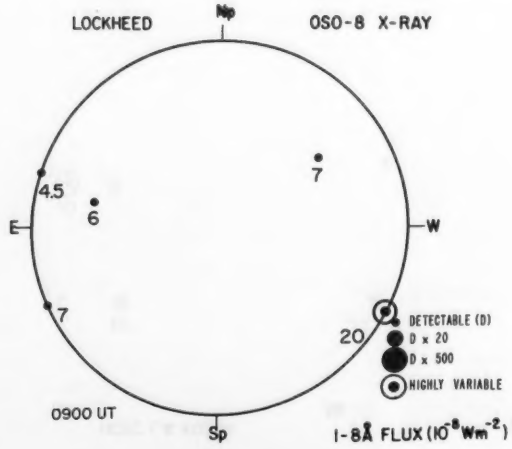
8.6 MM

Ant. Temp. Unit 100°K

87
Sep 77

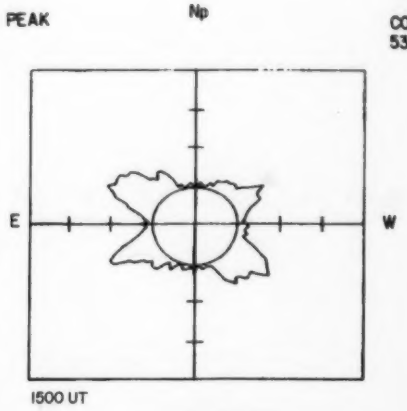
SEPTEMBER 28, 1977 (P = 25.78, B_o = 6.84, L_o = 32.70)

LOCKHEED OSO-8 X-RAY

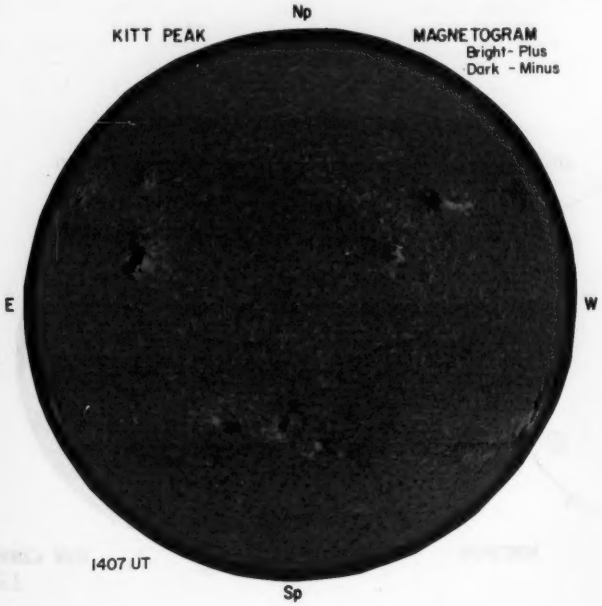


1-8Å FLUX (10^{-8} Wm^{-2})

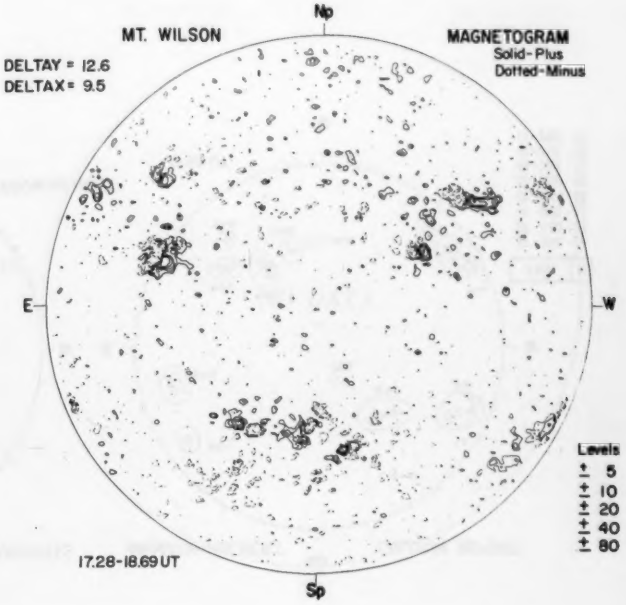
SACRAMENTO PEAK



KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus

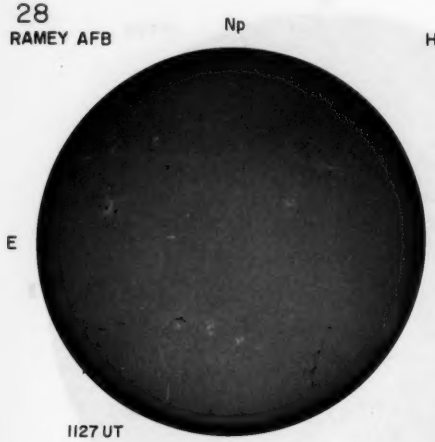


MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus
DELTAY = 12.6
DELTAX = 9.5



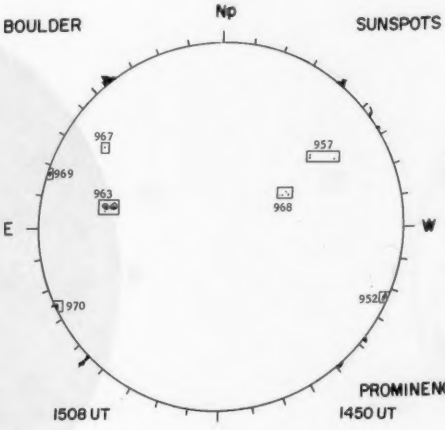
28

RAMEY AFB



1127 UT

Hα BOULDER



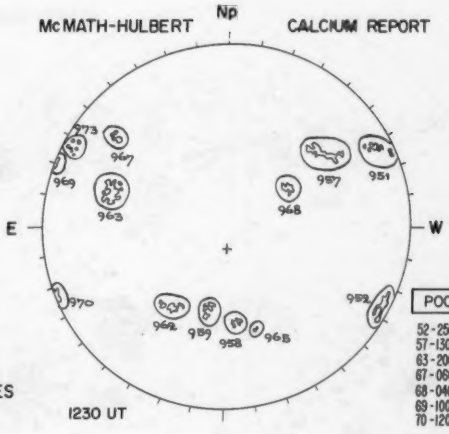
1508 UT

SUNSPOTS

PROMINENCES

1450 UT

McMATH-HULBERT



1230 UT

CALCIUM REPORT

POOR	S
52 - 2500	- 30
57 - 1300	- 25
63 - 2000	- 35
67 - 0600	- 25
68 - 0400	- 25
69 - 1000	- 30
70 - 1200	- 30

NOSC LA POSTA

2.0 CM

Ant. Temp. Unit 100°K

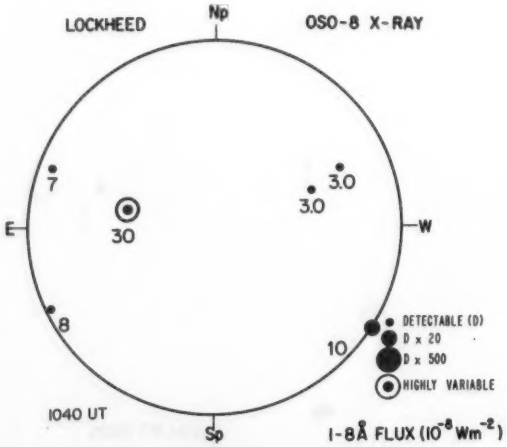
NOSC LA POSTA

8.6 MM

Ant. Temp. Unit 100°K

SEPTEMBER 29, 1977 (P = 25.86, B_o = 6.80, L_o = 19.51)

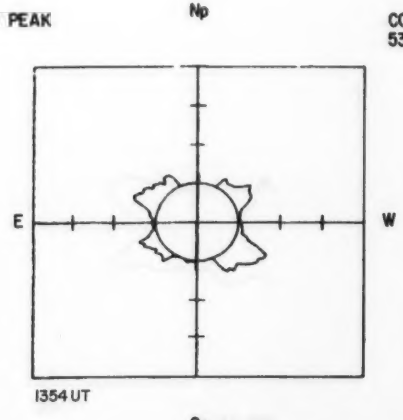
LOCKHEED OSO-8 X-RAY



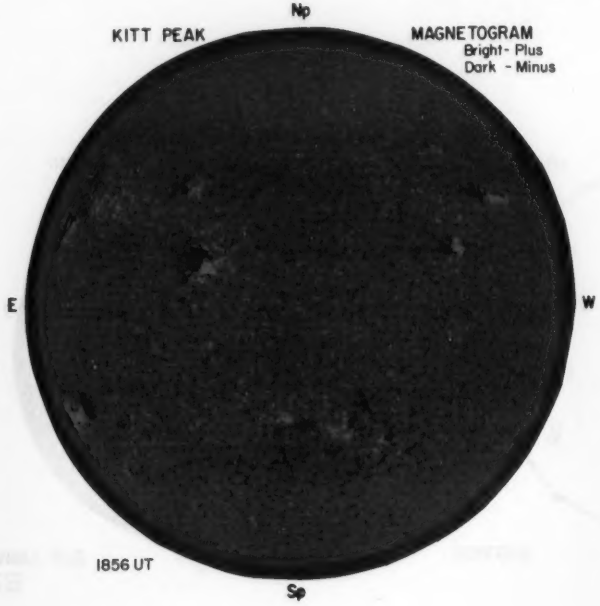
1-8Å FLUX (10^{-8} Wm^{-2})

SACRAMENTO PEAK

CORONA (1.15 $R_\odot$)
5303 Å

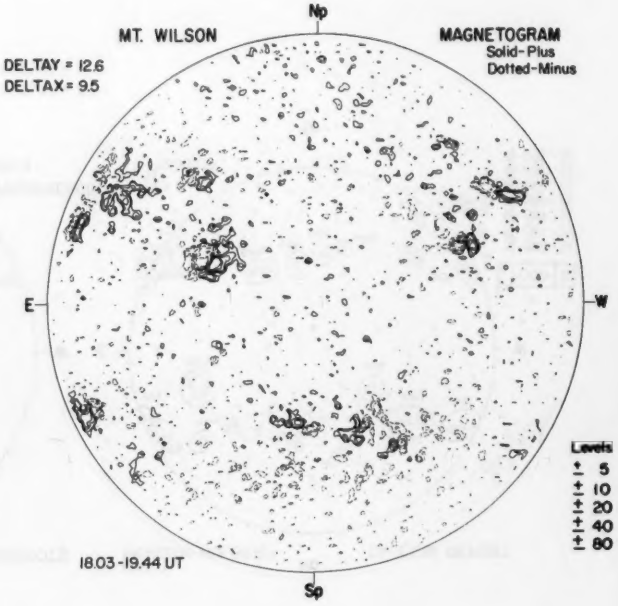


KITT PEAK MAGNETOGRAM
Bright - Plus
Dark - Minus



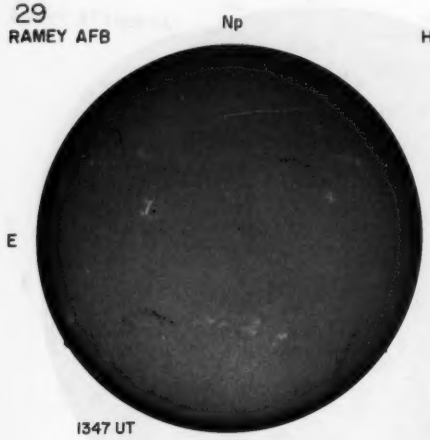
MT. WILSON MAGNETOGRAM
Solid - Plus
Dotted - Minus

DELTAY = 12.6
DELTAX = 9.5



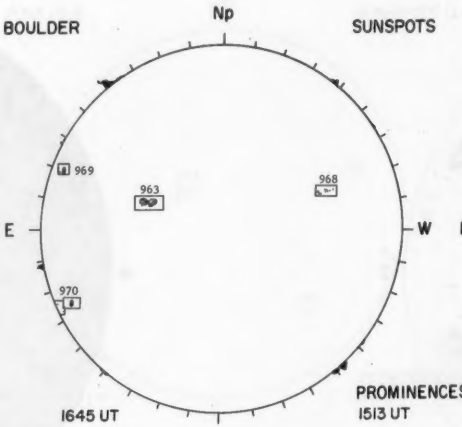
29

RAMEY AFB



1347 UT

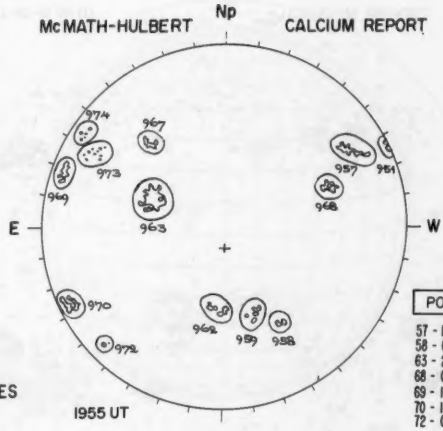
Hα BOULDER



1645 UT

SUNSPOTS

McMATH-HULBERT



1955 UT

CALCIUM REPORT

POOR	M
57 - 1200 - 2.5	
58 - 0300 - 30	
63 - 2000 - 35	
68 - 0500 - 2.5	
69 - 1400 - 30	
70 - 1800 - 30	
72 - 0300 - 2.5	

PROMINENCES

1513 UT

NOSC LA POSTA

2.0 CM

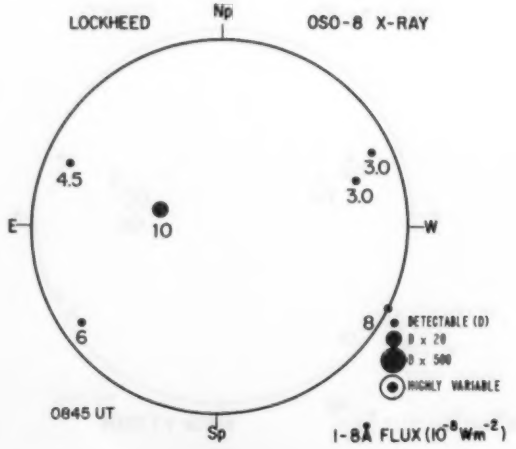
Ant. Temp. Unit 100°K

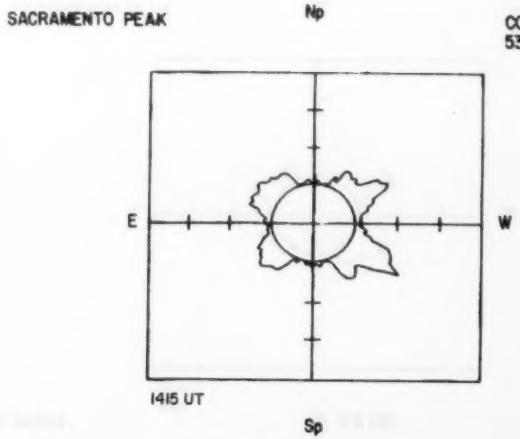
NOSC LA POSTA

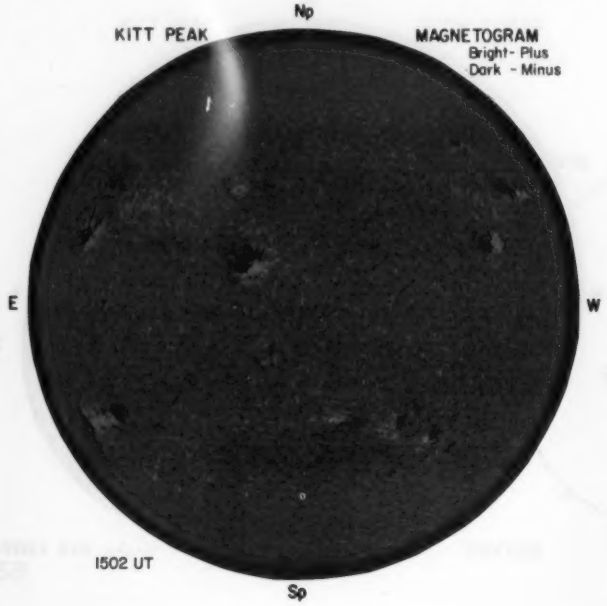
8.6 MM

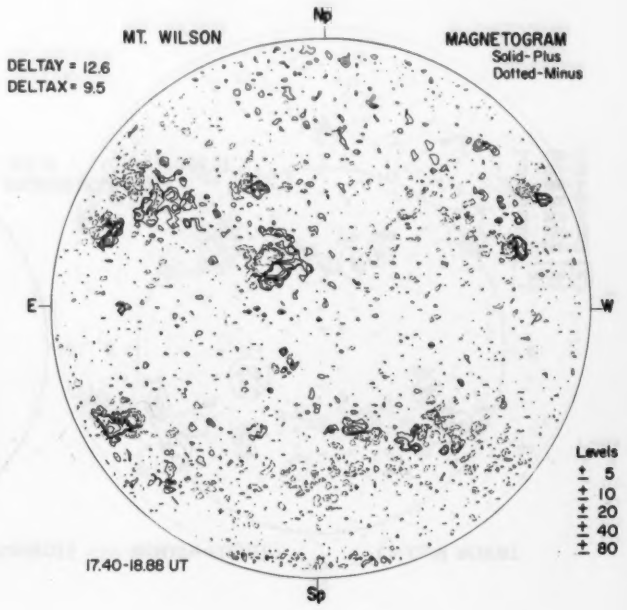
Ant. Temp. Unit 100°K

SEPTEMBER 30, 1977 (P = 25.94, B_o = 6.75, L_o = 6.31)







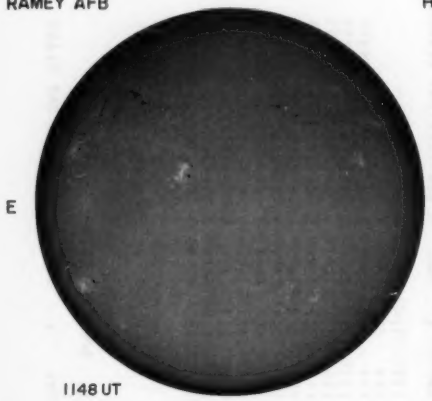


30

RAMEY AFB

Np

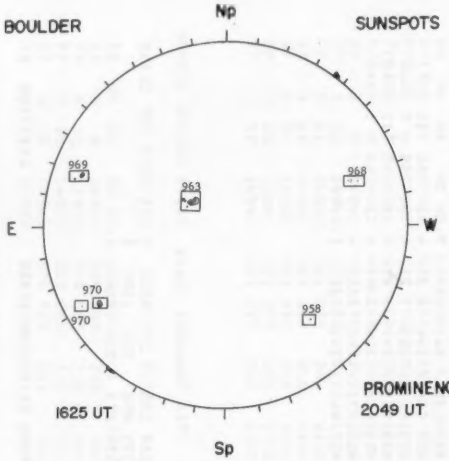
Hα



BOULDER

Np

SUNSPOTS



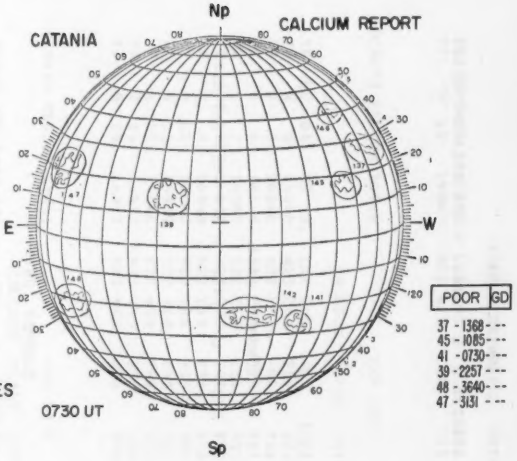
PROMINENCES

2049 UT

CATANIA

Np

CALCIUM REPORT

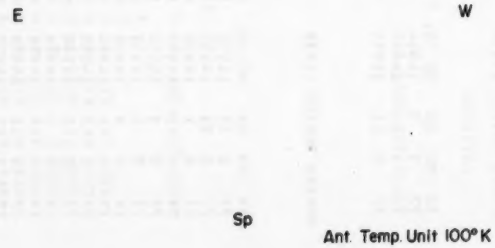


	POOR	GD
37 - 1368 -		
45 - 1085 -		
41 - 0730 -		
39 - 2257 -		
48 - 3640 -		
47 - 3131 -		

NOSC LA POSTA

Np

2.0 CM

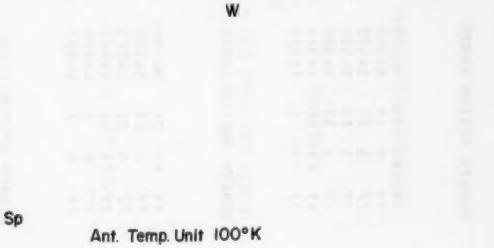


Ant. Temp. Unit 100°K

NOSC LA POSTA

Np

8.6 MM



Ant. Temp. Unit 100°K

93
Sep 77

REGIONS OF SOLAR ACTIVITY

SEPTEMBER 1977

MCMATH REGION 14925 CMP DATE 2.0

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	8	27	14925	S17 E69	18	200	1.0									
77	8	28	14925	S17 E57	18	200	1.5									
77	8	29	14925	S17 E43	16	200	1.0									
77	8	30	14925	S17 E32	17	100	1.5									
77	8	31	14925	S18 E19	17	100	1.0									
77	9	1	14925	S19 E07	15	100	1.0									

MCMATH REGION 14929 CMP DATE 3.9

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	8	29	14929	S16 E68	352	200	2.0									
77	8	30	14929	S16 E57	353	200	2.0									
77	8	31	14929	S17 E44	353	200	2.0									
77	9	1	14929	S18 E32	351	200	1.5									
77	9	2	14929	S18 E17	350	100	1.0									

MCMATH REGION 14935 CMP DATE 4.4

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	9	1	14935	N15 E40	343	100	1.5	19845	N16 E38	343	(AP)	3				
77	9	2	14935	N15 E26	341	500	3.0	19845	N15 E24	344	(B)	4	B	60	11	DFI
77	9	3	14935	N15 E14	342	900	3.0	19845	N15 E11	343	(B)	4	B	150	8	DAO
77	9	4	14935	N16 W01	344	1100	3.0	19845	N15 W03	344	(B)	4	B	40	11	DFO
77	9	5	14935	N16 W15	344	1000	2.5	19845	N16 W16	344	(BP)	4	B	40	5	BXO
77	9	6	14935	N16 W27	344	1200	2.5	19845	N16 W31	346	(AP)	4				
77	9	7	14935	N17 W40	343	900	3.0	19845	N17 W45	346	AP	1				
77	9	8	14935	N17 W56	345	1000	3.0									
77	9	9	14935	N17 W70	346	800	2.0									
77	9	10	14935	N17 W84	347	600	2.0									

MCMATH REGION 14944 CMP DATE 5.4

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	9	9	14944	S33 W55	331	300	2.0	19847	S35 W56	331	(AP)	3				
77	9	10	14944	S33 W67	330	300	2.0	19847	S34 W70	332	(AP)	3				
77	9	11	14944	S33 W90	340	300	1.0									

MCMATH REGION 14930 CMP DATE 6.4 RETURN OF REGION 14888 ROTATION 2

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	8	30	14930	N25 E85	325	500	1.5									
77	8	31	14930	N24 E77	320	3000	3.0	19842	N24 E77	319	(AP)	4				
77	9	1	14930	N25 E65	318	2700	3.0	19842	N25 E63	318	(BP)	4				
77	9	2	14930	N25 E52	315	3400	3.0	19842	N24 E50	318	(BP)	5	B	120	8	CSI
77	9	3	14930	N25 E40	316	3500	3.5	19842	N25 E39	315	(BP)	5	B	110	9	CSI
77	9	4	14930	N25 E26	317	3800	3.0	19842	N25 E25	316	(BP)	4	B	90	9	CSO
77	9	5	14930	N25 E12	317	3500	3.0	19842	N25 E12	316	(BP)	5	B	100	10	CSI
77	9	6	14930	N25 W01	318	3200	3.5	19842	N24 W01	316	(BP)	5	B	110	11	CSI
77	9	7	14930	N25 W13	316	3000	3.0	19842	N24 W16	317	(AP)	4	B	100	11	CSI
77	9	8	14930	N25 W26	315	2800	3.0	19842	N24 W29	317	(AP)	5	B	50	4	CSX
77	9	9	14930	N26 W38	314	2500	3.0	19842	N24 W42	317	(AP)	4	B	40	1	HSX
77	9	10	14930	N26 W50	313	2000	3.0	19842	N24 W55	317	(AP)	5	B	30	4	CSO
77	9	11	14930	N26 W62	312	2000	3.0	19842	N24 W67	316	(AP)	3	R	40	2	HAX
77	9	12	14930	N26 W74	311	1500	2.5	19842	N24 W81	316	(AP)	3	B	30	1	AXX

MCMATH REGION 14939 CMP DATE 7.9

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	9	4	14939	N06 E45	298	100	2.0									

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MCMATH REGION 14947 CMP DATE 9.3

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	9	11	14947	N23 W29	279	200	1.0									

MCMATH REGION 14940 CMP DATE 10.9 RETURN OF REGION 14894 ROTATION 3

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	9	4	14940	N21 E83	260	800	2.5									
77	9	5	14940	N21 E73	256	700	3.0									
77	9	6	14940	N22 E61	256	800	3.0									
77	9	7	14940	N21 E47	256	900	2.5									
77	9	8	14940	N22 E32	257	700	2.5									
77	9	9	14940	N23 E18	258	400	2.0									
77	9	10	14940	N23 E04	259	300	2.0									
77	9	11	14940	N22 W08	258	500	2.5		N23 W08				R	10	2	AXX
77	9	12	14940	N22 W21	258	500	2.0									
77	9	14	14940	N23 W49	259	400	1.5									
77	9	16	14940	N23 W76	258	500	1.0									

MCMATH REGION 14941 CMP DATE 12.2 RETURN OF REGION 14894 ROTATION 3

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	9	5	14941	N20 E88	241	900	2.5	19846	N19 E85	243	AP	3				
77	9	6	14941	N21 E76	241	1300	3.0	19846	N16 E70	245	(AP)	3	B	80	1	HSX
77	9	7	14941	N21 E63	240	1600	3.0	19846	N20 E57	244	(AP)	4	B	20	1	HRX
77	9	8	14941	N21 E48	241	2000	3.0	19846	N19 E44	244	(AP)	4	B	30	4	BXX
77	9	9	14941	N21 E36	240	2200	3.0									
77	9	10	14941	N21 E23	240	1800	3.0	19846	N21 E20	242	(AP)	4	B	20	4	BXO
77	9	11	14941	N21 E09	241	2100	3.0		N20 E10				R	10	1	AXX
77	9	12	14941	N20 W03	240	2100	2.5									
77	9	14	14941	N21 W30	240	2000	3.0									
77	9	16	14941	N20 W58	240	1500	2.0									
77	9	17	14941	N21 W70	240	1200	1.5									

MCMATH REGION 14945 CMP DATE 14.5 RETURN OF REGION 14902 ROTATION 5

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	9	9	14945	S24 E68	208	500	1.0									
77	9	10	14945	S24 E53	210	600	1.5									
77	9	11	14945	S23 E39	211	600	1.5									
77	9	12	14945	S24 E26	211	700	1.5									
77	9	14	14945	S24 W01	211	700	1.5									

MCMATH REGION 14942 CMP DATE 14.9

				CALCIUM PLAGE DATA				SUNSPOT DATA								
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	9	8	14942	N16 E90	199	400	1.5									
77	9	9	14942	N16 E75	201	1200	2.5	19848	N16 E69	206	(B	3				
77	9	10	14942	N17 E61	202	1000	3.0	19848	N16 E58	204	(B)	3				
77	9	11	14942	N17 E47	203	1500	3.5	19848	N16 E44	205	(B)	5	R	70	14	DAO
77	9	12	14942	N17 E33	204	1500	3.0	19848	N16 E29	206	(B)	4	B	170	18	DSI
77	9	13	14942					19848	N16 E16	206	(BY)	5	B	300	19	EKI
77	9	14	14942	N17 E05	205	1500	3.0	19848	N16 E03	206	(B)	5	B	160	8	EAO
77	9	15	14942					19848	N16 W11	207	(BF)	4	H	170	8	EAO
77	9	16	14942	N17 W22	204	1500	3.0	19848	N16 W25	208	BF	4	H	210	6	EAO
77	9	17	14942	N16 W34	204	1700	3.0	19848	N16 W38	207	(B)	4	B	100	5	EAO
77	9	18	14942	N16 W50	204	1800	3.0	19848	N16 W51	207	(B)	4	B	90	4	EAO
77	9	19	14942	N16 W64	204	1600	2.5	19848	N17 W71	212	(AP)	2	B	10	1	AXX
77	9	20	14942	N16 W74	205	1300	2.5									

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MCMATH REGION 14943 CMP DATE 15.6

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
77	9	8	14943	N09 E90	199	300	3.0
77	9	9	14943	N08 E84	192	3500	4.0
77	9	10	14943	N07 E68	195	4300	4.0
77	9	11	14943	N08 E55	195	4600	4.0
77	9	12	14943	N08 E41	196	4500	4.0
77	9	13	14943				
77	9	14	14943	N08 E14	196	5000	4.0
77	9	15	14943				
77	9	16	14943	N08 W15	197	4800	3.5
77	9	17	14943	N08 W26	196	4600	3.5
77	9	18	14943	N08 W42	196	4800	3.0
77	9	19	14943	N08 W57	197	5000	3.0
77	9	20	14943	N08 W67	198	5000	3.5
77	9	21	14943				

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	N07 E89				B	100	1	HSX
19849	N08 E79	196	(D)	4	B	990	12	EKC
19849	N08 E65	197	(D)	4	B	1100	21	EKC
19849	N08 E52	197	(D)	5	R	900	32	EKC
19849	N08 E37	198	(D)	5	B	910	49	EAC
19849	N08 E24	198	(D)	5	B	820	57	EKC
19849	N08 E11	198	(D)	5	B	680	61	EKC
19849	N08 W02	198	(D)	5	H	760	55	EKC
19849	N08 W15	198	Y	5	H	760	28	EKC
19849	N09 W29	198	(Y)	5	B	640	30	EKC
19849	N08 W44	200	(D)	5	B	730	22	EKC
19849	N09 W60	201	(BP)	3	B	920	19	DKC
19849	N09 W72	202	BP	4	B	730	16	DKC
19849	N08 W88	202	AP	2	B	240	2	DSO

MCMATH REGION 14948 CMP DATE 17.7 RETURN OF REGION 14908 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
77	9	11	14948	N20 E86	164	600	1.5
77	9	12	14948	N20 E70	167	900	1.5
77	9	14	14948	N19 E42	168	600	1.5

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

MCMATH REGION 14953 CMP DATE 19.2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
77	9	17	14953	N27 E15	155	100	1.5
77	9	18	14953	N27 E05	149	300	2.0
77	9	19	14953	N27 W11	151	200	1.5
77	9	20	14953	N27 W23	151	200	1.5
77	9	21	14953				
77	9	22	14953				
77	9	23	14953	N24 W60	150	600	2.0
77	9	24	14953				
77	9	25	14953	N24 W85	150	500	2.5

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
19852	N23 W34	148	(BP)	3	B	10	1	BFO
19852	N23 W45	149	(BP)	3	B	40	8	BXI
19852	N25 W61	151	AP	2	B	20	4	AXX
19852	N25 W70	148	X	1	B	10	2	AXX
	N20 W65				B	30	2	BXO

MCMATH REGION 14964 CMP DATE 21.6

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
77	9	26	14964	S24 W66	118	400	2.0
77	9	27	14964	S24 W79	118	500	2.5

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

MCMATH REGION 14951 CMP DATE 22.7

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
77	9	15	14951				
77	9	16	14951	N24 E79	103	1300	2.5
77	9	17	14951	N25 E70	100	1400	3.0
77	9	18	14951	N26 E52	102	1200	2.5
77	9	19	14951	N26 E35	105	1500	2.5
77	9	20	14951	N26 E20	103	1500	2.5
77	9	21	14951				
77	9	23	14951	N26 W13	103	1100	2.5
77	9	25	14951	N27 W37	102	1500	2.0
77	9	26	14951	N27 W50	102	1300	2.0
77	9	27	14951	N26 W62	101	1200	2.0
77	9	28	14951	N26 W75	101	1200	1.5
77	9	29	14951	N26 W90	99	300	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
19850	N24 E85	111	AP	3				
19850	N24 E70	113	(AP)	3	M	30	1	HSX
19850	N24 E56	113	(AP)	4	B	20	1	HSX
19850	N24 E43	113	(AP)	4	B	50	1	HSX
19850	N24 E28	113	(AP)	4	B	30	1	HSX
19850	N24 E16	114	AP	2	B	10	1	HSX
19850	N23 E00	114	AF	2	B	10	1	AXX

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MCMATH REGION 14960 CMP DATE 22.7

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
77	9	25	14960	N15 W37	102	200	1.5
77	9	26	14960	N14 W51	103	100	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	N20 W41				B	10	1	AXX

MCMATH REGION 14952 CMP DATE 23.2 RETURN OF REGION 14915 ROTATION 2

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
77	9	16	14952	S27 E90	92	700	1.5
77	9	17	14952	S26 E77	93	1300	3.5
77	9	18	14952	S25 E59	95	1300	3.5
77	9	19	14952	S25 E43	97	1700	3.5
77	9	20	14952	S25 E33	98	2000	3.5
77	9	21	14952				
77	9	22	14952				
77	9	23	14952	S25 W06	96	2700	3.0
77	9	24	14952				
77	9	25	14952	S25 W33	98	3100	3.0
77	9	26	14952	S25 W46	98	3200	3.0
77	9	27	14952	S25 W58	97	3200	3.0
77	9	28	14952	S25 W71	97	2500	3.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
	S26 E73				B	10	1	AXX
19851	S26 E58	98	(BP)	3	B	40	4	CRO
19851	S24 E43	98	(B)	4	B	220	13	DSI
19851	S24 E31	99	B	4	B	550	33	DKC
19851	S24 E14	100	(B)	4	B	440	16	DAI
19851	S23 E05	99	(B)	5	B	380	39	EKI
19851	S23 W09	99	B	4	B	320	8	DKO
19851	S23 W22	100	(B)	5	B	260	8	DKO
19851	S23 W35	99	(B)	5	B	220	65	DKO
	S24 W49				B	240	10	DSO
19851	S24 W61	98	(BP)	4	B	230	3	CSO
19851	S24 W78	102	AP	3	H	220	2	CSO

MCMATH REGION 14954 CMP DATE 25.4

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
77	9	18	14954	N29 E88	66	200	1.5
77	9	19	14954	N29 E75	65	200	2.0
77	9	20	14954	N29 E64	67	200	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

MCMATH REGION 14957 CMP DATE 25.8

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
77	9	23	14957	N29 E29	61	200	2.5
77	9	24	14957				
77	9	25	14957	N30 E03	62	600	3.0
77	9	26	14957	N30 W11	63	1100	3.0
77	9	27	14957	N29 W24	63	1100	2.5
77	9	28	14957	N29 W37	63	1300	2.5
77	9	29	14957	N29 W54	63	1200	2.5
77	10	02	14957	N29 W88		400	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
19853	N29 E29	61	AF	2	B	20	3	CRO
19853	N29 E15	63	(BF)	4	B	40	4	DRO
19853	N29 E01	63	(B)	3	B	90	8	CAI
	N27 W13				B	130	13	EAO
19853	N29 W26	63	(B)	4	B	110	7	EAO
19853	N29 W40	64	(B)	4	H	60	5	ERO

MCMATH REGION 14956 CMP DATE 27.0

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
77	9	23	14956	S41 E41	49	100	1.5
77	9	25	14956	S42 E19	46	300	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS

MCMATH REGION 14968 CMP DATE 27.1

CALCIUM PLAGE DATA

YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT
77	9	27	14968	N18 W06	45	100	1.0
77	9	28	14968	N18 W20	46	400	2.5
77	9	29	14968	N18 W37	46	500	2.5
77	9	30	14968				
77	10	01	14968				
77	10	02	14968	N18 W73		500	2.0
77	10	03	14968	N18 W89		400	1.0

SUNSPOT DATA

MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
19857	N18 W09	46	(B)	3				
19857	N18 W22	46	(B)	4	H	30	5	CRO
19857	N18 W35	46	(B)	4	B	70	10	DRO
19857	N18 W48	46	(B)	3	R	50	7	DRO
19857	N18 W63		(B)	2	B	20	5	B
19857	N18 W80		X	1				

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MCMATH REGION 14971 CMP DATE 27.4

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	10	02	14971	N42 W79		200	1.5									

MCMATH REGION 14965 CMP DATE 27.8

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	9	26	14965	S28 E17	35	200	1.5									
77	9	27	14965	S28 E03	36	100	1.0									
77	9	28	14965	S28 W10	36	100	1.0									

MCMATH REGION 14958 CMP DATE 28.3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	9	23	14958	S25 E63	27	200	1.5									
77	9	24	14958						S20 E52				8	10	1	AXX
77	9	25	14958	S25 E36	29	300	1.5									
77	9	26	14958	S25 E23	29	300	2.5									
77	9	27	14958	S25 E10	29	300	2.0									
77	9	28	14958	S25 W03	29	300	2.0									
77	9	29	14958	S25 W20	29	300	3.0									
77	9	30	14958					19861	S27 W31	29	(AF)	3	R	10	3	AXX
77	10	02	14958	S25 W57		400	1.5									
77	10	03	14958	S25 W80		300	1.5									

MCMATH REGION 14959 CMP DATE 29.1

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	9	23	14959	S20 E74	16	900	2.0	19854	S20 E68	22	X	1	B	10	1	AXX
77	9	24	14959					19854	S20 E55	23	(AP)	2				
77	9	25	14959	S20 E46	19	1000	3.0		S20 E41				B	10	1	AXX
77	9	26	14959	S20 E33	19	800	3.0									
77	9	27	14959	S20 E20	19	700	2.5									
77	9	28	14959	S21 E07	19	400	2.0									
77	9	29	14959	S22 W10	19	400	2.0									
77	10	02	14959	S22 W46		300	1.5									
77	10	03	14959	S22 W58		400	1.0									

MCMATH REGION 14980 CMP DATE 29.5

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	10	06	14980	N15 W89		500	1.0									

MCMATH REGION 14962 CMP DATE 30.0

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	9	24	14962					19855	S20 E73	5	(B)	2	B	20	2	BXO
77	9	25	14962	S19 E58	7	1000	3.0	19855	S19 E58	6	(B)	2	B	30	2	BXO
77	9	26	14962	S19 E46	6	1000	3.0									
77	9	27	14962	S20 E34	5	600	2.5									
77	9	28	14962	S20 E19	7	500	2.0									
77	9	29	14962	S20 E02	7	300	2.0									
77	10	02	14962	S20 W34		300	2.0									
77	10	03	14962	S20 W46		300	1.5									

MCMATH REGION 14966 CMP DATE 30.3

				CALCIUM PLAGE DATA				SUNSPOT DATA							
YR	MO	DA	MC NO.	LAT CMD	L	AREA	INT	MW NO.	LAT CMD	L	MAG.	H	STA	AREA	CNT	CLASS
77	9	26	14966	S30 E49	3	200	3.0		S30 E43				B	10	3	BXX
77	9	27	14966	S30 E36	3	100	2.5									

Note: No calcium spectroheliograms were secured at the McMath-Hulbert Observatory on September 13, 15, 21, 22, 24 and 30, 1977.
No sunspot observations were made at Mt. Wilson on September 26, 1977.

DAILY CALCIUM PLAGE INDEX

SEPTEMBER 1977

YR	MO	DAY	INDEX	YR	MO	DAY	INDEX	YR	MO	DAY	INDEX
77	9	1	8.0	77	9	11	23.6	77	9	21	*
77	9	2	9.3	77	9	12	24.7	77	9	22	*
77	9	3	12.8	77	9	13	*	77	9	23	11.2
77	9	4	13.6	77	9	14	30.2	77	9	24	*
77	9	5	12.5	77	9	15	*	77	9	25	15.4
77	9	6	14.5	77	9	16	22.0	77	9	26	18.6
77	9	7	13.2	77	9	17	20.9	77	9	27	16.1
77	9	8	13.4	77	9	18	17.8	77	9	28	14.2
77	9	9	13.4	77	9	19	16.3	77	9	29	15.1
77	9	10	16.5	77	9	20	15.6	77	9	30	*

* NO OBSERVATIONS

SUDDEN IONOSPHERIC DISTURBANCES

SEPTEMBER 1977

DAY	UNIVERSAL TIME START	END	MAX	IMP	WIDE SPREAD INDEX	NUMBER OF STATION REPORTS BY TYPE SWF	SCNA	SEA	SPA	LF-SPA	SES	SFD	KNOWN FLARE	McMATH REGION
07	1351	1425	1355	1-	1			1					1356	14935
07	1715	1915	1737	1	5	1		1	1		9		NF	
07	1753	1850	1806	1-	1	1							1759E	14941
07	2230	2350	2245	2+	5	3		2	3	1	8		2222	X-RAY
09	1604	1620D	1620	2	5	3		1	1		9		1609	14943
09	1626	1845	1638	2+	5	5	1	3	2	1	12		1830	14943
10	1445U	1507	1452	1-	1	1							1445E	14943
11	1846	1915	1853	1-	3	1			1		6		1849E	14943
16	2129	0416	2300	2	5	2			3		8		2123	14943
16	2232	0016	2253	1+	5	2		1	4		7		2230	14943
18	0021	0359	0046	1+	5	1		1	2		3		0019	14942
18	0659	0757	0706	1-	1				1				0654	14943
18	1830	1905	1832	1-	1	1							1822	14952
18	1905	2000	1913	1	5	1			1		11		1906	14943
19	0009	0104	0016	1-	5				3		3		0004	14943
19	1028	1324	1046	3	5	2		3	3		2		1028E	14943
19	1340	1422	1402	1-	1			1					1351E	14943
19	1935	2010	1939	1-	5	1					3		NF	
20	0256	0936	0359	2	3	1			1		1		0251	14943
20	1844	1910	1849	1	5	2					4		1838	14943
20	2301	2341	2307	1-	1				1				2300	14952
21	0816	0920	0822	1-	3				1		1		0821	14942
21	1701	1745	1708	1-	3				1		4		1707E	14943
22	0611	0638	0623	1-	1			1					0617	14943
22	0729E	0814	0741	1-	3			1	1				0730	14952
23	0644	0900	0706	1-	1				1				0648	14952
24	0214	0257	0224	1-	1				1				0210	14952
24	1938	2005U	1939U	1-	3			1			2		1938	14963
25	0440	0508	0445	1-	5				2		1		0433	14963
25	0910	0956	0922	1-	3				1		1		0911	14952
25	1336	1445	1355	2	5	3		5	2		8		1334	14963
25	1655	1845	1704	1+	5	3	1	3	2		6		1658E	14963
25	1904	2007	1924	1	5	2		1	1		3		1901	14957
26	0021	0135D	0026	1	5	1			1		2		0018	X-RAY
26	0134	0257	0153	2	3	1			2		2		0130	X-RAY
26	0533	0730	0546	1	3				1		1		0525	14952
26	0836	0908	0846	1	5			2	2		1		0836	14963
27	1532	1556	1535	1-	1			1					1531	14963
28	0528	0616	0541	1-	1			1					0541	14952
29	0614	0905	0646	1-	1				1				0623E	14963

PERIODS OF NO OBSERVATIONS:

DATE	TIME (UT) and STATION
01-21	0000-2400 A34
01	0000-2400 A30, 1705-2132 UM (18 kHz)
05	1405-1524 UM (13 kHz), 2010-2200 UM (13 kHz)
07	0000-2400 TN
09-14	0000-2400 A28
15	1704-2127 UM (18 kHz), 1840-1903 TM
23-30	0000-2400 A28
26-30	0000-2400 A40
26	1824-1832 TM
27-28	2225-1200 TM
27	0000-2400 TN

STATIONS REPORTING FOR SEPTEMBER 1977

AAVSO (A1, A19, A21, A28, A30, A31, A34, A35, A40) (SES) (A1, A26, A31) (SEA) (A31) (SWF)
DARMSTADT (DA) (SWF)
HAWAII (HA) (SFD)
HERSTMONCEUX (HC) (SEA)
HIRAISO (HI) (SWF)
HOBART (TA) (SEA, SES)
HUANCAYO (HU) (SWF)
INUBO (IN) (SPA)
KONA (KN) (SFD)
KUHLUNGSBORN (KU) (SEA, SPA)
MANILA (MA) (SPA)
MAUI (KL) (SFD)
MC MATH (MC) (SWF, SCNA)
NEW JERSEY (NJ) (SES)
PANSKA VES (PU) (SWF, SEA, SES)
PRESTON (LO) (SEA)
SAO PAULO (UM) (SES, SPA)
SOFIA (SF) (SES)
ST CLOUD (SC) (SES)
TABLE MOUNTAIN (TM) (SPA, LF-SPA)
TORINO (TN) (SPA)
UPICE (UI) (SEA)

SID's BY McMATH REGION

SEPTEMBER 1977

DAY	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
REGION																														
35							1																							
41							1																							
42																		1			1									
43									2	1	1					2		2	3	2	1	1									
52																		1		1		1	1	1	1	1		1		
57																									1					
63																								1	3	1	1		1	
X-RAY							1																			2				
UNKNOWN							1												1											
NO FP																														

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1977

SEP 1977	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
01	0000	1005	MANI										
	0000	0732	CULG				0153						IIIB,W
			CULG				0408.5						IIIB,U,W
	0508	0837	DURN										
	0856	1040	DURN										
	0904	1427	DWIN										
	0515	1728	WEIS				0909.2	0909.3	1				IIIB
	1047	1616	DURN										
			WEIS				1357.8	1358.5	2				IIIG
			WEIS				1602.5	1603.6	1				IIIG
	1012	2314	SGMR							1603.0	1603.7	3	V
	1300	2245	HARV				1603		2	1603		2	IIIB
	2032	2400	CULG				2038	2039					IIIG,W
	2145	2400	MANI										
02	0000	1003	MANI										
	0000	0732	CULG										
	0747	1354	DWIN				0825.5	0826.5	2				IIIG
	0518	1409	WEIS				0825.9	0826.2	1				IIIG
			DWIN				0903.6		2				IIIB
			WEIS				0903.7	0903.8	1				IIIG
	0939	1254	DURN										
	1013	2312	SGMR										
	1306	1750	DURN										
	1300	2245	HARV				1940	1944	2	1940	1944	2	IIIB
			HARV				2010		1	2010		1	IIIG,W
	2032	2400	CULG				2032	2118					IIIN,W
	2146	2400	MANI										
03	0000	1003	MANI										
	0000	0318	CULG										
	0415	0732	CULG										
	0513	0542	DURN										
	0518	0800	WEIS										
	0548	1121	DURN										
	1150	1748	DURN	1150	1748		1150	1748					IW,N
	1147	1724	WEIS				1317.3	1317.4	1				IIIB
			WEIS				1457.6	1524.0	2				IIIGG
	1014	2310	SGMR							1459.0	2310.0	1	CONT
	1300	2245	HARV				1500	1501	1	1500	1501	1	IIIG
	2032	2400	CULG										
	2146	2400	MANI										
04	0000	1003	MANI										
	0000	0732	CULG										
	0517	1746	DURN										
	0521	1114	WEIS				0824.0	0824.4	1				IIIG
	1015	2308	SGMR										
	1134	1821	WEIS										
	1300	2245	HARV										
	2032	2400	CULG										
	2146	2400	MANI										
05	0000	1003	MANI										
	0000	0731	CULG										
	0518	1745	DURN										
	0723	0938	DWIN				0832.5	0832.6	1				IIIG
			DWIN				0858.0	0858.1	1				IIIG
	0603	1720	WEIS				0921.0	0935.0	1				II
	1013	1507	DWIN				1013	1300	1				IN
	1300	2245	HARV				1945	1947	1				UNCL
	1016	2307	SGMR							1951.0	2009.8	1	CONT
			HARV				1951	1953	2	1951	1953	2	IIIG,UNCL
			HARV				1954	2002	3	1954	2002	3	II
	2031	2400	CULG				2110	2205					IIIN,W
			CULG				2110	2210	1				IS,C
	2145	2400	MANI										
			CULG				2152	2200	1				UNCLF
			CULG				2349.5						IIIB,W
06	0000	1001	MANI										

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1977

SEP 1977	TIMES OF OBSERVATION START UT	END UT	STATION	EVENTS DECIMETRIC BAND START UT	END UT	INT	METRIC BAND START UT	END UT	INT	DEKAMETRIC BAND START UT	END UT	INT	SPECTRAL TYPE
06	0000	0731	CULG				0203	0207	1				IIIG
			CULG				0210	0212	1				IIIG
			CULG				0219.5						IIIB,W
			CULG				0245	0249					IIIG,W
	0518	0754	DURN	0518	1742		0518	1742					IW,N
	0645	1501	DWIN				0903.0	0903.6	2				IIIG
	0819	1742	DURN	0903.2	0903.3		0903.2	0903.3					IIIG,W
	0755	1036	WEIS				0903.4	0903.7	2				IIIG
	1017	2305	SGMR										
	1052	1720	WEIS										
			DWIN				1102.0	1102.4	1				IIIG
			DWIN				1252.0	1253.1	2				IIIG
			DURN	1252.0	1252.8	2	1252.0	1252.8	3				IIIG,U
	1300	2245	HARV										
			DWIN				1356.0	1356.8	1				IIIG
			DURN	1356.6	1356.7	1	1356.6	1356.7	1				IIIG
			DWIN				1454.0	1454.6	2				IIIG
			DURN	1454.4	1454.6	1	1454.4	1454.6	1				IIIG
			DURN	1548.1	1548.7		1548.1	1548.7					IIIG,W
	2031	2400	CULG				2031	2130					IS,W
	2145	2400	MANI										
07	0000	1001	MANI										
	0000	0730	CULG				0155	0600					IS,W
			CULG				0431	0432	1				IIIG
			CULG				0519.5	0520.5	1				IIIG
	0519	1742	DURN	0519 E	1742 D		0519 E	1742 D					IW,N
			CULG				0521.5	0522	1				IIIG
			CULG				0533.5	0534					IIIG,W
			DURN	0533.6	0533.6	1	0533.6	0533.6	1				III
	0522	1718	WEIS				0544.6	0554.7	1				IIIB
			CULG				0554.5		1				IIIB
	0647	1406	DWIN				0647	1406	1				IS
			CULG				0703.5		1				IIIB
			WEIS				0744.2	0744.4	2				IIIB
			WEIS				1029.4	1029.5	2				IIIB
			WEIS				1245.5	1246.4	1				IIIG
	1018	2304	SGMR							1246.2	1246.6	1	IIIG
			WEIS				1457.7	1458.0	2				IIIB
	1300	2246	HARV				1935	1936	3	1935	1936	3	IIIG
			HARV				1951	1955	3	1951	1955	3	IIIG
			SGMR							1952.0	1952.3	1	III
	2031	2400	CULG				2031	2230					IS,W
			CULG				2046.5		1				IIIB
			CULG				2105.5		1				IIIB
			CULG				2135	2135.5	1				IIIG
			CULG				2137	2400					IIIN,W
	2146	2400	MANI										
			CULG				2202	2202.5	1				IIIG
			CULG				2221.5		1				IIIB
			CULG	2225	2227	1	2225	2227	1				IIIGG
			CULG							2226	2330	1	SWF
			CULG	2228	2228.5	1							IIIG
			CULG	2229.5	2232	2	2229.5	2235	2	2231	2234	2	IIIGG,V
			CULG	2230	2245	1	2230	2345	3	2240	2252	3	IV
			HARV				2230	2234	3	2230	2234	3	IIIGG,V
			SGMR							2231.0	2233.1	3	V
			CULG	2231	2238	2	2231	2330	2	2240	2325	2	II, HB
			HARV				2232	2246	3	2239	2246	3	II
			HARV				2237	2239	3	2237	2239	3	H
			CULG				2255	2300	2				IIIG
			CULG				2319	2321	2				IIIG
08	0000	0730	CULG				0000	0313					IIIN,W
	0000	1000	MANI										
			CULG				0004	0006	1				IIIG
			CULG				0041		1	0041		1	IIIB
			CULG				0044	0045	1				IIIG
			CULG				0052.5	0054	1	0052.5	0053.5	1	IIIG,V
			CULG				0401.5						IIIB,W

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1977

SEP 1977	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS: DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
08			CULG				0403						IIIB,W
	0524	0551	WEIS				0541.0	0541.2	1				IIIB
			CULG				0541		1				IIIB
			CULG				0631.5	0632.5					IIIG,W
			CULG				0635.5	0636	1				IIIG
			CULG				0638	0639.5	2	0638	0638.5	1	IIIG,V
	0519	0901	DURN	0746.8	0747.1	1							IIIG
			DURN	0758.7	0759.1	1							IIIG
	0908	1314	DWIN										
	0916	1737	DURN	0916	1737 D								IW,N
	0828	1736	WEIS				0919.2	0919.3	1				IIIB
			WEIS				0946.2	0946.5	1				IIIG
			WEIS				1307.5	1307.7	1				IIIG
			DURN	1335.2	1335.2	3							III
			WEIS				1435.8	1436.1	1				IIIB
	1019	2302	SGHR							1436.0	1436.3	1	IIIG
			DURN	1445.3	1445.5	1							IIIG
			DURN	1532.8	1532.8	3							IIIG
			WEIS				1641.4	1642.7	1				IIIG
	2030	2400	CULG				2140	2142.5	1				IIIG
	1300	2245	HARV				2141	2142	1	2141	2142	1	IIIG
	2158	2400	MANI										
09	0000	0959	MANI										
	0000	0729	CULG				0104.5	0107.5					IIIG,W
			CULG				0210	0212					IIIG,W
	0520	1738	DURN	0520 E	1629		0520 E	1629					IW,N
	0525	1530	WEIS										
	0908	1340	DWIN				1047.1	1051.1	2				IIIGG
			DWIN				1101.0	1101.2	1				IIIG
	1545	1714	WEIS				1629.5	1721	3				IV
			DURN	1629.5	1630.3	2	1629.5	1630.3	2				IIIG
			DURN	1629	1738 D	3	1629	1738 D	3				IV
			DURN	1629	1738 D	3	1629	1738 D	3				IC,DC,N
	1300	2245	HARV				1633		3				IIIG
			WEIS				1635.3	1654	2				IIIGG
	1021	2300	SGHR							1636.0	1656.9	3	IV
			HARV				1636	1642	3	1636	1642	3	IIIGG,V
			HARV				1638	1700	2	1638	1700	2	IC
			HARV				1638	1647	3	1636	1647	3	II
			SGHR							1643.2	1651.0	3	II
			SGHR							1656.9	2300.0	2	CONT
			HARV				1700	1740	1	1700	1740	1	I
	2030	2400	CULG				2131		1				IIIB
			CULG				2138.5		1				IIIB
			CULG				2139		1				IIIB
	2146	2400	MANI										
			CULG				2216		1				IIIB
			CULG				2234.5	2235	2	2234.5	2235	1	IIIG
			HARV				2235		1	2235		1	IIIB
			CULG				2259	2300	1				IIIG
10	0000	0959	MANI										
	0000	0729	CULG				0440.5						IIIB,W
	0521	1146	DURN										
	1022	2258	SGHR										
	0526	1712	WEIS				1039.4	1039.5	1				IIIB
			WEIS				1053.8	1054.1	1				IIIG
	1212	1732	DURN										
	1300	2245	HARV										
	1406	1757	DWIN				1504.3	1504.7	1				IIIG
			DWIN				1659.8	1700.4	2				IIIG
	2029	2400	CULG										
	2146	2400	MANI										
11	0000	0957	MANI										
	0000	0728	CULG										
	0538	1104	DURN	0538 E	1104 D	1	0538 E	1104 D	1				IC,DC,N
			DURN	0751.6	0751.6	1							III
	1205	1304	WEIS				0826.4	0826.7	1				IIIB

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1977

SEP 1977	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
11	0910	1739	OWIN				0910	1739	1				IN
			OWIN				1006.5	1006.7	2				IIIG
			WEIS				1008.8	1008.9	1				IIIB
	1023	2256	SGMR										
			OWIN				1044.0	1046.6	2				IIIGG
			WEIS				1045.1	1046.7	3				IIIGG
	1124	1731	DURN	1124 E	1731 D	1	1124 E	1731 D	1				IC,DC,N
			OWIN				1348.1	1349.0	3				IIIG
	1329	1710	WEIS				1348.4	1349.9	2				IIIG
			WEIS				1430.0	1431.4	2				IIIG
	1300	2245	HARV				1430	1431	1				IIIG
			OWIN				1607.6	1608.3	2				IIIG
			WEIS				1607.7	1608.5	2				IIIG
			HARV				1608		1				IIIG
			OWIN				1725.6	1725.8	2				IIIG
			HARV				1726		1				IIIB
	2029	2400	CULG										
	2146	2400	MANI										
12	0000	0957	MANI										
	0000	0728	CULG				0140.5	0142.5					IIIG,W
			CULG				0215						IIIB,W
	0539	0729	DURN	0539 E	0729 D		0539 E	0729 D					IW,N
	0742	1405	DURN	0742 E	1405 D		0742 E	1405 D					IW,DC,N
	0529	1708	WEIS				0745.3	0745.4	1				IIIB
			DURN	0821.7	0821.9	1	0821.7	0822.2	2				IIIG
			WEIS				0827.8	0828	1				IIIB
			DURN	0955.0	0955.5	2	0955.0	0955.5	3				IIIG
			WEIS				0955.3	0957.3	2				IIIGG
	1431	1730	DURN	1431 E	1730		1431 E	1730					IW,N
	1024	2254	SGMR							1928.2	1928.7	1	III
	1300	2245	HARV				1928	1929	3	1928	1929	3	IIIG,V
			HARV				1954		2	1954		2	IIIG
			SGMR							1957.1	1958.0	1	III
			HARV				1957	1958	3	1957	1958	3	IIIG,V
	2030	2400	CULG				2050.5	2051	2	2050.5	2051	1	IIIG
			HARV				2050	2051	2	2050	2051	2	IIIG
			CULG	2124	2400	1	2215	2400	1				IS
			CULG				2129	2130	1				IIIG
	2147	2400	MANI										
13	0000	0957	MANI										
	0000	0728	CULG	0000	0618		0000	0410					IS,W
			CULG	0126	0127.5	1	0126	0129	3	0126.5	0128	2	IIIGG,V,U
			CULG				0212.5		1				IIIB
			CULG				0248	0250					IIIG,W
			CULG				0346	0403					IIIN,W
	0538	0829	DURN	0538	0829		0538	0829					IW,N
	0707	1145	OWIN				0800	0930	1				IS
	0531	0947	WEIS				0820.2	0903.6	2				IS
	0851	1726	DURN	0851 E	1726		0851 E	1726					IW,N
			WEIS				0915.6	0916.8	1				IIIG
			OWIN				0953.5		2				IIIB
	1025	2253	SGMR										
	1214	1437	OWIN				1257.6	1258.0	2				IIIG
	0953	1707	WEIS				1258.6	1259.7	1				IIIG
			OWIN				1407.5						IIIB
			OWIN				1415.5	1415.8	2				IIIG
			OWIN				1416.6	1417.4					IIIG
	2028	2400	CULG	2032	2033	1	2032	2033	2				IIIG
	1300	2245	HARV				2032		1				IIIB
	2147	2400	MANI										
14	0000	0957	MANI										
	0000	0727	CULG	0040.5			0040.5						IIIB,W
			CULG				0354.5						IIIB,W
	0538	1726	DURN	0606.4	0606.6	1	0606.4	0606.6	1				IIIG
			CULG				0606.5	0607	1				IIIG
	0641	1604	WEIS				0649.3	0649.5	1				IIIB
			CULG				0649	0650.5	1				IIIG

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14			WEIS				0935.3	0935.7	1				IIIG
	0708	1111	OWIN				0953.3	0953.7	2				IIIG
			DURN	1116.3	1116.3	1	1116.3	1116.3	1				III
			WEIS				1119.3	1119.4	2				IIIU
			WEIS				1557.2	1600.1					IIIG,RS
			DURN				1557.3	1558.8					IIIG,W
	1026	2251	SGMR							1558.6	1600.0	1	IIIG
	1300	2245	HARV				1558	1600	2	1559	1600	2	IIIG
			HARV				2018		2				IIIG
	2034	2400	CULG				2034	2100	1				IS
			CULG				2052	2400					IIIN,W
			CULG				2056	2057	1				IIIG,U
			CULG				2143	2214					IIIGG,W
	2147	2400	MANI										
			SGMR							2148.0	2149.8	1	V
			CULG	2148	2149	1	2146	2151	2	2147.5	2150	1	IIIGG
			HARV				2148	2150	3	2148	2150	3	IIIGG
15	0000	0722	CULG				0000	0247					IIIN,W
	0000	0354	MANI										
			CULG				0033	0036.5	2				IIIGG
			CULG	0112.5	0114	1	0112.5	0115	1				IIIG
			CULG				0119	0125	2	0120	0124.5	1	IIIGG,RS
	0359	0956	MANI										
			CULG				0436	0440	1				IIIGG
	0533	0714	WEIS										
	0538	0740	DURN										
	0706	1418	OWIN				0814.8		1				IIIB
			OWIN				0846.4	0846.6	1				IIIG
			OWIN				0858.3	0858.5	1				IIIG
			OWIN				1019.4	1020.7	2				IIIG
	0906	1702	WEIS				1019.7	1020.7	1				IIIG
			OWIN				1027.0		1				IIIB
	1027	2249	SGMR										
			OWIN				1049.3	1050.0	2				IIIG
			WEIS				1049.3	1050.2	2				IIIG
	0906	1725	DURN	1139.9	1140.1	1	1139.9	1140.1	1				IIIG
			OWIN				1140.0	1140.3	2				IIIG
			OWIN				1141.2	1141.4	1				IIIG
	1315	2245	HARV										
	2027	2400	CULG				2059		2				IIIB
	2148	2333	MANI										
			CULG	2214.5	2216	1							IIIG
			CULG	2217	2217.5	1							IIIG
16	0000	0727	CULG										
	0010	0528	MANI										
	0538	0740	DURN										
	0540	0956	MANI										
	0758	1724	DURN	0833.0	0833.5	3	0833.0	0833.5	3				IIIG
	0720	1221	OWIN				0833.3		3				IIIB
			OWIN				0909.1	0910.0	1				IIIG
			OWIN				0912.0	0912.5	1				IIIG
			OWIN				0913.0	0914.0	2				IIIG
	0534	1700	WEIS				0913.3	0913.9	1				IIIG
			OWIN				0957.6	0958.0	2				IIIG
			DURN	0957.7	0957.8	3							IIIG
			OWIN				1200.5	1200.6	1				IIIG
	2148	2400	MANI										
	2027	2400	CULG	2225	2400	2	2230	2400	2				IV
			CULG				2229	2252	2				IIIG
			CULG				2232.5	2252	2	2237	2252	2	II
			CULG				2232	2400	1				SWF
	1316	2246	HARV				2234	2242	3	2235	2241	3	II
	1028	2247	SGHR							2235.1	2246.4	2	II
			HARV				2245	2246	3				IIIG
17	0000	0955	MANI										
	0000	0726	CULG	0000	0050	2	0000	0025	2				IV
			CULG							0000	0200	1	SWF

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17			CULG				0025	0430	1				IV
			CULG				0035	0726					IS,W
	0535	0554	WEIS										
			CULG	0621.5	0622.5								IIIG,W
	0538	1724	DURN	0624.0	0624.2	2	0624.0	0624.2	2				IIIG
	0614	1658	WEIS				0624.4	0624.5	1				IIIB
			CULG	0624	0625		0624	0625					IIIG,W
			CULG				0626						IIIB,W
	1029	2246	SGMR										
	1316	2245	HARV										
	2148	2400	MANI										
	2027	2400	CULG				2217						IIIB,W
			CULG				2241	2245					IIIG,W
			CULG				2310	2400	1				IIIN
			CULG				2314	2325	1				IIIGG
18	0000	0726	CULG				0000	0240	1				IIIS
	0000	0954	MANI										
			CULG				0023	0037	1				IIIGG
			CULG							0025	0130	1	SWF
			CULG				0130		2	0130		1	IIIB
			CULG				0336	0337					IIIG,W
			CULG				0412	0726					IIIN,W
	0538	1039	DURN										
			CULG				0623.5	0624.5	2				IIIG
	0538	1453	WEIS				0623.6	0624.2	1				IIIG
			WEIS				1123.3	1124.3	1				IIIG
			WEIS				1133.6	1133.8	1				IIIG
			WEIS				1239.4	1239.9	2				IIIG
	1038	2244	SGMR							1239.6	1239.8	1	III
	1316	2245	HARV										
	1504	1656	WEIS										
	2026	2400	CULG										
	2148	2400	MANI										
19	0000	0950	MANI										
	0000	0726	CULG				0244.5						IIIB,W
			CULG				0314						IIIB,W
			CULG	0329.5	0332.5	1	0329.5	0331	1				IIIGG
			CULG	0440	0441		0440	0441					IIIG,W
	0538	1654	WEIS				0543.4	9543.7	1				IIIB
			CULG	0543.5	0544	1	0543.5	0544	2				IIIG
			CULG				0551	0726					IIIN,W
			CULG	0645	0649	2	0645	0649	2	0648.5	0649	1	IIIGG
			WEIS				0646.9	0647.0	1				IIIB
			WEIS				0648.5	0648.7	2				IIIB
	0734	1753	DWIN				0853.0	0853.5	2				IIIG
			DWIN				0950.0	0952.2	3				IIIG
			WEIS				1026.5	1027.1	1				IIIB
			DWIN				1027.4						IIIB
			WEIS				1031.4	1031.5	1				IIIB
			DWIN				1035.2	1035.7	3				II
			DWIN				1035	1048	2				IC,IIIG
			WEIS				1038.5	1044	3				II
			WEIS				1042.4	1130.0	3				IV
			DWIN				1048	1105	2				IV
			WEIS				1115	1200	2				
			WEIS				1215.0	1215.7	3				IS,OC
			DWIN				1215.3	1215.4	2				IIIG
	1031	2242	SGMR							1215.3	1215.8	2	IIIG
			DWIN				1225.9	1227.0	3				III
			WEIS				1225.9	1226.5	2				IIIG
			WEIS				1233.8	1234.0	2				IIIG
			DWIN				1240.1	1240.5	2				IIIG
			SGMR							1240.4	1241.2	2	III
			DWIN				1241.8	1242.2	2				IIIG
			DWIN				1342	1350	1				UNCL
			DWIN				1355.0	1356.3	2				IIIG
			SGMR							1431.3	1432.1	2	III
	1316	2245	HARV				1434		2				IIIG

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19			WEIS				1500	1501.9	1				IIIG
			HARV				1501		1				IIIG
			WEIS				1534	1534.1	1				IIIB
			WEIS				1615.5	1615.6	1				IIIG
			DWIN				1615.5						IIIB
			SGMR							1624.8	1626.3	2	IIIG
			WEIS				1625.2	1625.8	1				IIIG
			HARV				1625	1626	3	1625	1626	3	IIIG,V
	2026	2400	CULG				2026	2140					IIIS,W
			CULG	2052	2400		2026	2400					IS,W
			CULG				2140	2400					IIIN,W
	2148	2400	MANI										
20	0000	0950	MANI										
			CULG				0000	0500	1				IIIN
	0000	0725	CULG	0000	0315		0000	0315					IS,W
			CULG				0243	0244	1				IIIG
			CULG	0250	0410	2	0255	0525	2				IV
			CULG				0303	0304	1				IIIG
			CULG							0310	0510	1	SWF
			CULG	0314	0323	2	0314	0320	2				P
			CULG				0315	0330	2				II
	0640	1024	DWIN				0640	1024	1				IS
	0703	1241	WEIS				0906	0906.1	1				IIIB
			WEIS				0930.1	0932	1				IIIG
	1032	2240	SGMR										
	1037	1433	DWIN				1037	1433	1				IS
	1200	1720	DURN										
	1255	1652	WEIS				1632.3	1633.1	1				IIIG
	1316	2245	HARV				1632	1633	2	1632	1633	2	IIIG
			HARV				1841	1842	3	1841	1842	3	IIIG
			HARV				1933		3	1933		3	IIIB
			HARV				2000		3	2000		3	IIIB
			CULG				2108.5	2110	1				IIIG
			CULG				2130.5						IIIB,W
	2025	2400	CULG	2146	2147	1	2025	2400	1				IS
	2147	2400	MANI										
			CULG				2301						IIIB,W
21	0000	0949	MANI										
			CULG				0037	0037.5	1				IIIG
			CULG				0251.5						IIIB,W
			CULG				0253.5						IIIB,W
			CULG				0434						IIIB,W
	0000	0725	CULG	0502	0504		0000	0725					IS,W
	0538	1715	DURN	0538 E	1230	1	0538 E	1230	1				IC,DC,N
	0541	0847	WEIS										
			CULG				0623						IIIB,W
			CULG				0631	0632					IIIG,W
	1033	2238	SGMR										
	1500	1649	WEIS										
	1316	2245	HARV				1703	1704	1	1703	1704	1	IIIG
	2025	2400	CULG				2025	2400					IS,W
			CULG				2025	2358					IIIN,W
			CULG				2030	2031.5	1				IIIG,V
	2148	2400	MANI										
22	0000	0948	MANI										
			CULG	0017.5									IIIB,W
			CULG				0054	0701					IIIN,W
			CULG	0119	0119.5								IIIG,W
	0539	1705	DURN	0539 E	1705 D	1	0539 E	1705 D	1				IC,DC,N
			CULG	0621									IIIB,W
	0000	0725	CULG	0624	0626		0000	0725					IS,W
			CULG	0632.5									IIIB,W
	0709	1729	DWIN				0800	1729	1				IS
	0543	1035	WEIS				0817	1625	2				IS
	1034	2237	SGMR							1054.0	1930.0	1	CONT
	1316	2245	HARV				1318	2240	2				IS
			DURN	1357.2	1357.3	1	1357.2	1357.3	1				IIIG

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22			DURN	1358.0	1358.0	1							III
			DWIN				1358.8	1400.8	2				IIIG
			DURN	1359.0	1400.5	2	1359.0	1400.5	2				IIIGG
	1345	1645	WEIS				1509.2	1511.5	2				IIIGG
			HARV				1509	1519	3	1509	1511	3	UNCL
			DURN	1510.7	1511.3	1	1510.7	1510.7	1				IIIG
			HARV				1611	2103	2				IIIS
			CULG				2025	2400	1				IIIS
	2025	2400	CULG	2025	2400	1	2025	2250	2				IS
			CULG				2051		2				IIIB
	2147	2400	MANI										
			CULG				2148	2150.5	2				IIIG,V,U
			HARV				2149	2150	3				IIIG
23			CULG				0000	0724	1				IIIS
	0000	0724	CULG	0000	0724	1	0000	0724	1				IS
	0000	0947	MANI										
			CULG				0136	0138	2	0136.5	0137.5	1	IIIG,V
	0539	1700	DURN	0539 E	1405	1	0539 E	1405	1				IC,DC,N
	0635	1745	DWIN				0635	1745	1				IS
	0805	1645	WEIS				0937.9	1045	1				IS
			WEIS				1024.0	1605.0	1				IIIN
			DWIN				1134.8	1135.0	2				IIIG
	1036	2235	SGMR							1135.0	1135.2	1	III
			SGMR							1208.5	1604.0	1	IIIS
			DWIN				1257.5	1257.7	2				IIIG
			DWIN				1311.5	1315.0	1				IIIG
			DWIN				1425.4	1425.9	2				IIIG
			DWIN				1543.5	1544.8	2				IIIG
	1316	2245	HARV				1544		2	1544		2	IIIG
			HARV				1604		2	1604		2	IIIB
			HARV				1628		2	1628		2	IIIG
			HARV				1739	1740	1	1739	1740	1	IIIG
			HARV				1752	1754	1				IIIG
			HARV				1903		1	1903		1	IIIB,W
	2024	2400	CULG				2024	2400					IIIS,W
	2147	2400	MANI										
24	0000	0946	MANI										
	0000	0724	CULG				0000	0724					IIIS,W
			CULG				0153.5	0155.5	2	0153.5	0155	1	IIIG
			CULG	0209.5	0212.5	1	0209	0213.5	2	0209.5	0213	2	IIIGG
			CULG				0218	0219	2	0218	0219	1	IIIG
			CULG				0239.5	0240.5	2	0239.5	0240.5	1	IIIG
			CULG	0241.5	0242	1	0241	0244	2	0241	0243.5	2	IIIG,V
			CULG				0448	0449	1	0448	0449	1	IIIG
			CULG	0525	0525.5	1	0524	0526.5	3	0524.5	0526	2	IIIG
	0545	1255	WEIS				0552	0605	3				IV
	0539	1700	DURN	0554.0	0555.2	3	0554.0	0555.2	3				IIIGG
			DURN	0554.0	0600.3	2	0554.0	0600.3	3				IC
			CULG	0554	0605	1	0554	0724	1				IV
			CULG	0554	0556	1	0554	0557	3	0554	0556.5	1	IIIGG,V
			CULG				0555	0605	2				II, HB
			CULG				0634.5	0635.5	2	0635	0635.5	1	IIIG
			WEIS				0635.0	1220.0	1				IIIN
			WEIS				0801.0	0805.0	2				IIIGG
			WEIS				0942.0	1004.0	1				IN
			DURN				0944.1	0950.5	2				I,DC,N
			WEIS				1230.3	1231.0	2				IIIGG
	1037	2232	SGMR							1230.8	1231.0	1	III
	1315	1645	WEIS										
			SGMR							1451.4	1451.7	1	III
	1316	2245	HARV				1451	1452	1	1451	1452	1	IIIG,W
			SGMR							1520.0	1520.3	1	III
			HARV				1520		1	1520		1	IIIB,W
			HARV				1546		1	1546		1	IIIB
			HARV				1720		1	1720		1	IIIB
			HARV				1837	1838	2	1837	1838	2	IIIG
			HARV				1843		1	1843		1	IIIB,W
			HARV				1853		1	1853		1	IIIB,W

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24	2024	2400	CULG				2024	2400					IIIN,W
			CULG	2140	2400								IS,W
	2147	2400	MANI										
			CULG				2213.5		1				IIIB
25	0000	0724	CULG				0000	0341					IIIN,W
			CULG	0000	0225								IS,W
	0000	0944	MANI										
			CULG				0121	0122	1				IIIG
			CULG				0420.5	0421	1				IIIG
	0539	1653	DURN										
	0815	1730	DWIN				0815	1730	1				IS
	1038	2231	SGMR										
	1330	1640	WEIS										
	0705	1655	DURN	1345.8	1345.8	3							III
	1316	2245	HARV				1655		1	1655		1	IIIB
	2024	2400	CULG	2024	2400								IS,W
			CULG				2116.3						IIIB,W
			CULG				2146						IIIB,W
	2147	2400	MANI										
			CULG				2234	2236.5					IIIG,V,U,W
			CULG				2259.5						IIIB,W
26	0000	0723	CULG	0000	0723								IS,W
	0000	0445	MANI										
			CULG				0033	0723					IIIN,W
			CULG	0140	0140.5	1							FAST DRIFT
			CULG	0143	0144	1							FAST DRIFT
			CULG				0245	0246	2	0245	0245.5	1	IIIG,U
	0538	1655	DURN										
	0741	0943	MANI										
	0549	1200	WEIS				0803	0806.5	1				IIIGG
	1223	1640	WEIS										
	1316	2245	HARV				1722		1	1722		1	IIIG
			HARV				1742		1	1742		1	IIIB
			HARV				1747		1	1747		1	IIIB
			HARV				1821	1826	1	1821	1826	1	IIIG,W
	1039	2230	SGMR							1910.0	1915.0	3	V
			HARV				1910	1916	3	1910	1916	3	IIIGG,V,UN
			HARV				1916	2156	1	1916	2156	1	IIIN,W
	2023	2400	CULG	2023	2400		2023	2400					IS,W
			CULG				2023	2400					IIIN,W
	2147	2400	MANI										
			CULG				2156	2157	1				IIIG
			CULG				2259	2300	1				IIIG
			CULG	2320.5	2321	1	2320.5	2321	1				IIIG,U
			CULG	2333		1	2333		1				IIIB
27	0000	0724	CULG	0000	0724	1	0000	0724	1				IS
			CULG				0000	0035					IIIN,W
	0000	0942	MANI										
			CULG				0035	0130	1				IIIS
			CULG				0130	0324					IIIN,W
	0538	1655	DURN	0538 E	1225	1	0538 E	1225	2				IC,DC,N
			DURN	0725.6	0725.6	3							IIIG
	0800	1356	DWIN				0800	1356	1				IS
			DWIN				0806.6	0807.1	2				IIIG
	0730	1117	WEIS				0806.8	0807.3	1				IIIG
			DWIN				1237.2	1238.6	2				IIIG
			DWIN				1339.5	1340.2	2				IIIG
	1509	1730	DWIN				1509	1730	1				IS
			DWIN				1531.4	1531.6	2				IIIG
			DURN	1532.0	1532.2	3							IIIG,RS
	1316	2245	HARV				1532		2				IIIG
			DWIN				1538.9	1540.3	2				IIIG
	1430	1541	WEIS				1539.3	1540.6	3				IIIG
	1040	2228	SGMR							1540.1	1541.6	2	V
			HARV				1540	1541	3	1540	1541	3	IIIG,V
			CULG				2032.5	2033.5					IIIG,W
	2023	2400	CULG	2107	2400		2033	2040					IS,W

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1977

SEP 1977	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
27			CULG	2119									IIIB,W
	2146	2400	MANI										
			CULG				2227						IIIB,W
			CULG				2234.5						IIIB,W
28	0000	0722	CULG	0000	0722								IS,W
	0000	0657	MANI										
			CULG	0348	0524		0041	0524					IIIN,W
			CULG	0518	0519.5	1	0518	0519.5	2				IIIGG
	0540	1655	DURN	0540 E	1000	1	0540 E	1000	2				IC,DC,N
	0552	1313	WEIS				0557	0647	1				IN
	0703	0944	MANI										
	0815	1226	DWIN				0815	1226	1				IS
	1041	2226	SGMR										
			DWIN				1146.9	1147.3	2				IIIG
			WEIS				1147	1148.4	1				IIIG
	1315	1313	DWIN				1315	1313	1				IS
	1316	2245	HARV										
	1428	1620	WEIS										
	1430	1730	DWIN				1430	1730	1				IS
	2023	2400	CULG	2023	2400		2023	2400					IS,W
			CULG				2023	2325					IIIN,W
	2146	2400	MANI										
29	0000	0610	MANI										
	0000	0722	CULG	0000	0722		0000	0722					IS,W
			CULG	0348	0349.5								IIIG,W
			CULG	0421.5	0422	1	0421.5	0422	2				IIIG
			CULG				0437						IIIB,W
			CULG				0500.5		2				IIIB
			CULG	0615	0722	1	0625	0722	1				IS,C
			CULG				0624	0633	1				IIIGG,U
	0625	0821	MANI										
	0552	1633	WEIS				0628	0629.6	2				IIIG
			WEIS				0631.1	0632.5	2				IIIG
			WEIS				0643.5	0753	1				IN
	0750	1730	DWIN				0750	1730	1				IS,N
	0835	0943	MANI										
			DWIN				0913.5	0915.0	2				IIIG
	1042	2224	SGMR										
	0540	1301	DURN	1045.5	1047.0	3							UNCLF
			DURN	1048.0	1049.5	3							UNCLF
			WEIS				1115.9	1116.6	2				IIIG
			DWIN				1116.0	1116.6					IIIG
			DWIN				1445.3	1446.4					IIIG
	1317	1655	DURN	1527.2	1527.4	3							IIIG
			DURN				1621.0	1621.0	3				III
			DWIN				1621.0	1621.2	2				IIIG
			DURN				1641.1	1641.1	2				I
	1316	2245	HARV				1902	1905	2				IIIG
			CULG				2023	2143	1				IIIN
	2023	2400	CULG				2023	2400					IS,W
	2145	2400	MANI										
			CULG				2339.5	2340					IIIG,W
30	0000	0722	CULG				0000	0155					IS,W
	0000	0942	MANI										
			CULG	0132		1	0132		2				IIIB
			CULG	0235	0722								IS,W
			CULG				0239						IIIB,W
			CULG				0241						IIIB,W
			CULG	0451.5	0452		0451.5	0452					IIIG,W
			CULG				0532	0533	1				IIIG
			CULG				0534.5		1				IIIB
	0540	0644	DURN										
	0554	1305	WEIS										
			CULG				0628						IIIB,W
			CULG				0632						IIIB,W
	0747	1523	DWIN				0747	1523	1				IS
			DWIN				0849.5	0850.4	2				IIIG

SOLAR RADIO EMISSION
SPECTRAL OBSERVATIONS

SEPTEMBER 1977

SEP 1977	TIMES OF OBSERVATION START UT	TIMES OF OBSERVATION END UT	STATION	EVENTS DECIMETRIC BAND START UT	DECIMETRIC BAND END UT	DECIMETRIC BAND INT	METRIC BAND START UT	METRIC BAND END UT	METRIC BAND INT	DEKAMETRIC BAND START UT	DEKAMETRIC BAND END UT	DEKAMETRIC BAND INT	SPECTRAL TYPE
30	1043	2223	SGMR										
	1042	1652	DURN	1114.6	1114.6	2							III
			DURN				1210	1410					IW,N
	1316	2245	HARV										
	1439	1632	WEIS										
	2023	2400	CULG	2057	2126		2110	2230					IS,W
			CULG				2123.5	2125.5					IIIG,W
	2145	2400	MANI										

The symbols used in connection with the spectral type in describing the important bursts are as follows:

B = Single burst
G = Small group (< 10) of bursts
GG = Large group (> 10) of bursts
C = Underlying continuum (particularly with type I)
S = Storm in the sense of intermittent but apparently connected activity
N = Intermittent activity in this period
U = U-shaped burst of Type III

RS = Reverse slope burst
DP = Drifting pairs
DC = Drifting Chains
H = Herringbone
W = Weak
P = Pulsations
CONT = Continuum
UNCLF = Unclassified activity

SELECTED SOLAR EVENTS

SEPTEMBER 1977

Culgoora

UT Date 197.7 SEPTEMBER	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions: Central Dist. ($R_\odot$)	Positions: Position Angle (Deg.)	Polarization	Intensity (1-3)		
6	0202	0206	43.25 80 160	1.3	90	-	2 2 1	IIIG *	This region produced intermittent type IIIs until 21 Sept.
6/7	2300	0500	80 160	1.3	90	Varying	1	I	This region continued intermittently until 21 Sept.
7	2229	2345	(See October Report)						
16/17	2245	0520	A(43.25 (80 (160 B(43.25 (80 (160	1.2) 1.2) 1.0) .9 .9 .7	340 320	See note	3-1	Type IV: start of observations. Moved from position A to position B at times indicated. Decayed into type I source before end of observations at 0520	In progress at
18	0027	0037	43.25 80 160	1.3 1.3 1.1	315	-	3 3 2	IIIGG	*
19/20	2245	0320	80 160	.5	330	r R	1 2	I	Complex source structure polarization at 0348r (160)& (80)
	0320	0515	43.25 80 160	1.0 1.2 1.0	340 320 320	see note	3 3 3	IV	Type II observed on spectrum at lower frequencies at 0315.

Days without Heliograph observations: .....NIL.....

* Other type IIIs observed at same position during the day.

SELECTED SOLAR EVENTS

SEPTEMBER 1977

Culgoora

UT Date 197.7 SEPTEMBER	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions: Central Dist. ($R_\odot$)	Positions: Position Angle (Deg.)	Polarization	Intensity (1-3)		
22/23	2356	0000	160	.8	180	L	1	I	Type I from these regions continued until end of obs. at 0440.
			80) 160)	.4	240	R	1	I	
23	0135	0138	43.25) 80) 160)	1.3	340) 340) 330)	-	3 2 2	IIIGG, V *	Type IIIs observed from this region until 28 Sept.
24	0208	0213	43.25) 80) 160)	1.1) .9) .8	265) 260)	-))	3 3 2	IIIGG *	Type IIIs also observed from this region on 25 Sept.
24/25	2300	0500	160	.9	40	unpol.	1	I	This region persisted until 28 Sept. Type IIIs also from this region
	2300	0500	160	1.1	70	unpol.	1	I	This region persisted until 30 September.

Days without Heliograph observations: .....

* Other type IIIs observed at same position during the day.

COSMIC RAY INDICES

(Neutron Monitors)

SEPTEMBER 1977

Sept 1977	THULE Average cts/hr	ALERT Average cts/hr	DEEP RIVER Average cts/hr	CALGARY Average cts/hr	SULPHUR MT Average cts/hr	KIEL Average cts/hr	CLIMAX Average cts/hr	TOKYO Average cts/hr	KULA Average cts/hr
1	Data not available at time of publication	7505.3	6976.2	Data not available at time of publication	Data not available at time of publication	6301.4	4215.2	3642.3	Data not available at time of publication
2		7481.3	7000.1			6309.2	4213.2	3635.7	
3		7492.7	7015.8			6309.0	4232.8	3637.2	
4		7480.8	7015.1			6309.0	4225.6	3643.2	
5		7514.5	7026.2			6324.1	--	3644.9	
6		7509.1	7037.0			6320.8	4241.7(36)	3644.8	
7		7487.0	7032.8			6330.4	4226.8	3645.5	
8		7524.3	7057.2			6354.9	4237.2	3646.2	
9		7548.0	7056.5			6371.3	4261.1	3645.8	
10		7523.3	7079.5			6367.2	4280.3	3652.3	
11		7480.7	7058.2			6319.8	4262.1	3649.4	
12		7385.9	6964.9			6276.1	4221.1	3632.9	
13		7278.8	6859.5			6175.9	4160.6	3630.9	
14		7281.4	6819.7			6130.9	4116.3	3612.3	
15		7274.9	6823.3			6144.7	4121.0	3615.3	
16		7318.9	6864.8			6195.5	4143.4	3625.7	
17		7331.5	6866.7			6213.1	4158.0	3630.3	
18		7388.9	6907.6			6236.4	4178.3	3632.5	
19		7415.9	6948.7			6246.3	4194.0	3636.8	
20		7404.8	6938.7			6281.2	4231.0	3646.3	
21		7328.5	6916.1			6230.4	4203.5	3625.3	
22		7070.0	6621.0			6082.1	4012.8	3570.5	
23		7068.5	6659.3			6024.8	4006.5	3568.6	
24		7375.5	6905.4			6180.1	4137.5	3613.8	
25		7404.8	6946.2			6250.5	4189.7	3644.6	
26		7438.9	7030.7			6339.3	4261.3	3657.5	
27		7456.7	7018.6			6316.3	4256.6	3661.4	
28		7473.4	7008.0			6330.3	4240.6	3650.5	
29		7472.3	7028.5			6312.0	4240.2	3640.0	
30		7438.5	6996.0			6303.7	4225.0	3631.6	
MEAN		7405.2	6949.3			6262.9	4195.5	3633.8	

( ) Number of hours for which data are available if less than 24. Number of Section Hours at Climax if sum of both sections is less than 40 hours.

Thule, Alert, Calgary, Sulphur Mountain, Kiel, Climax and Kula Scaling Factors = 100.
Deep River Scaling Factor = 300.

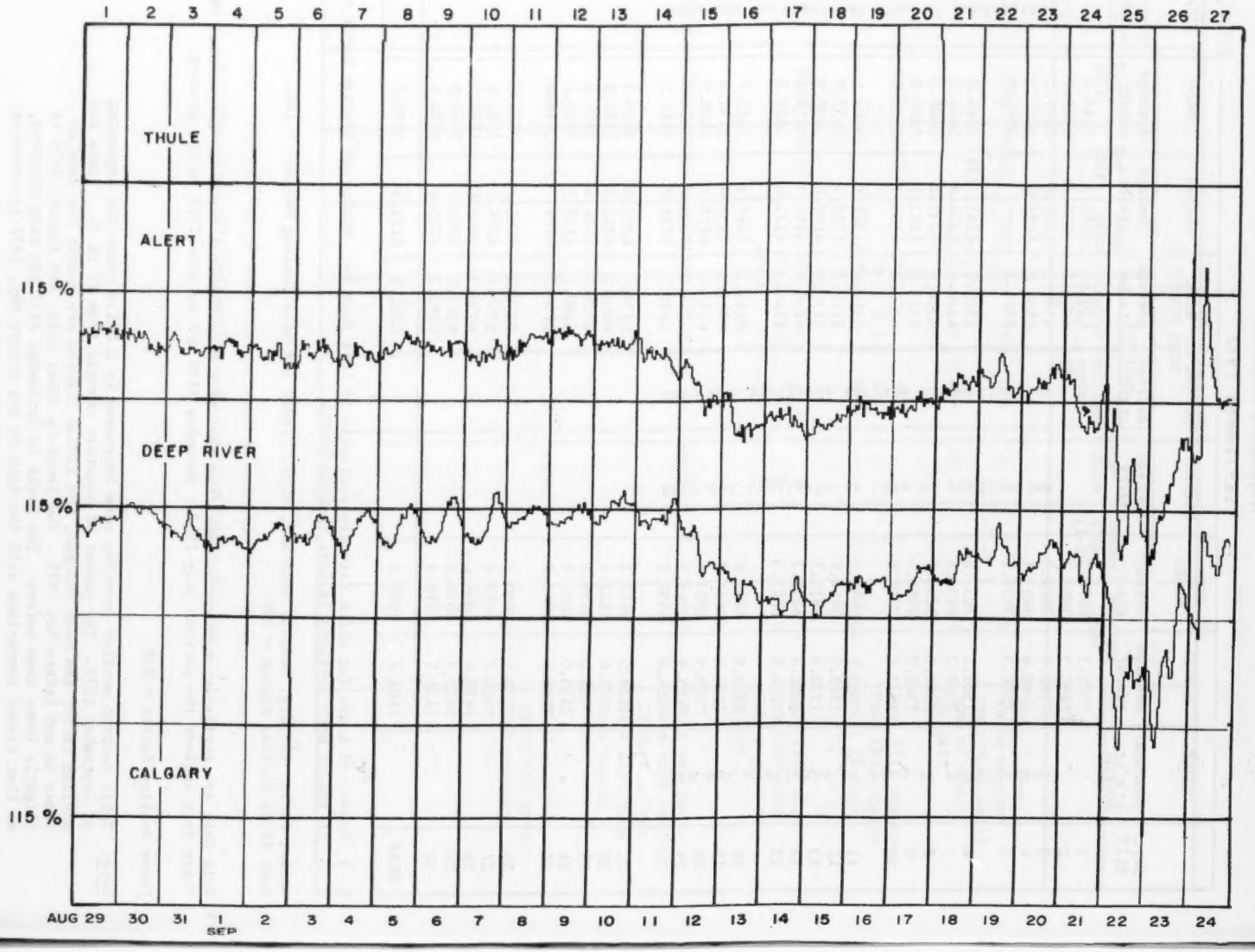
* Kula data are available on magnetic tape from the World Data Center A for Solar-Terrestrial Physics. These data include the periods July 1967 - December 1970 and October 1975 to the present.

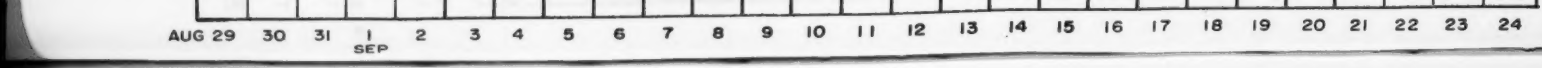
Tokyo Scaling Factor = 256.

Note: Tokyo neutron monitor counting rate increased by 2.0/1.5 since the beginning of September 1977. The number of counters changed from 27 to 36. Since the scaling factor has been changed, the listed figures are nearly the same as those in and before May 1977. The level in June, July, and August, 1977 is slightly lower than before. The level in September 1977 has been adjusted, so that direct comparison with the data in and before May, 1977 is possible.

COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1970 (August - September 1977)

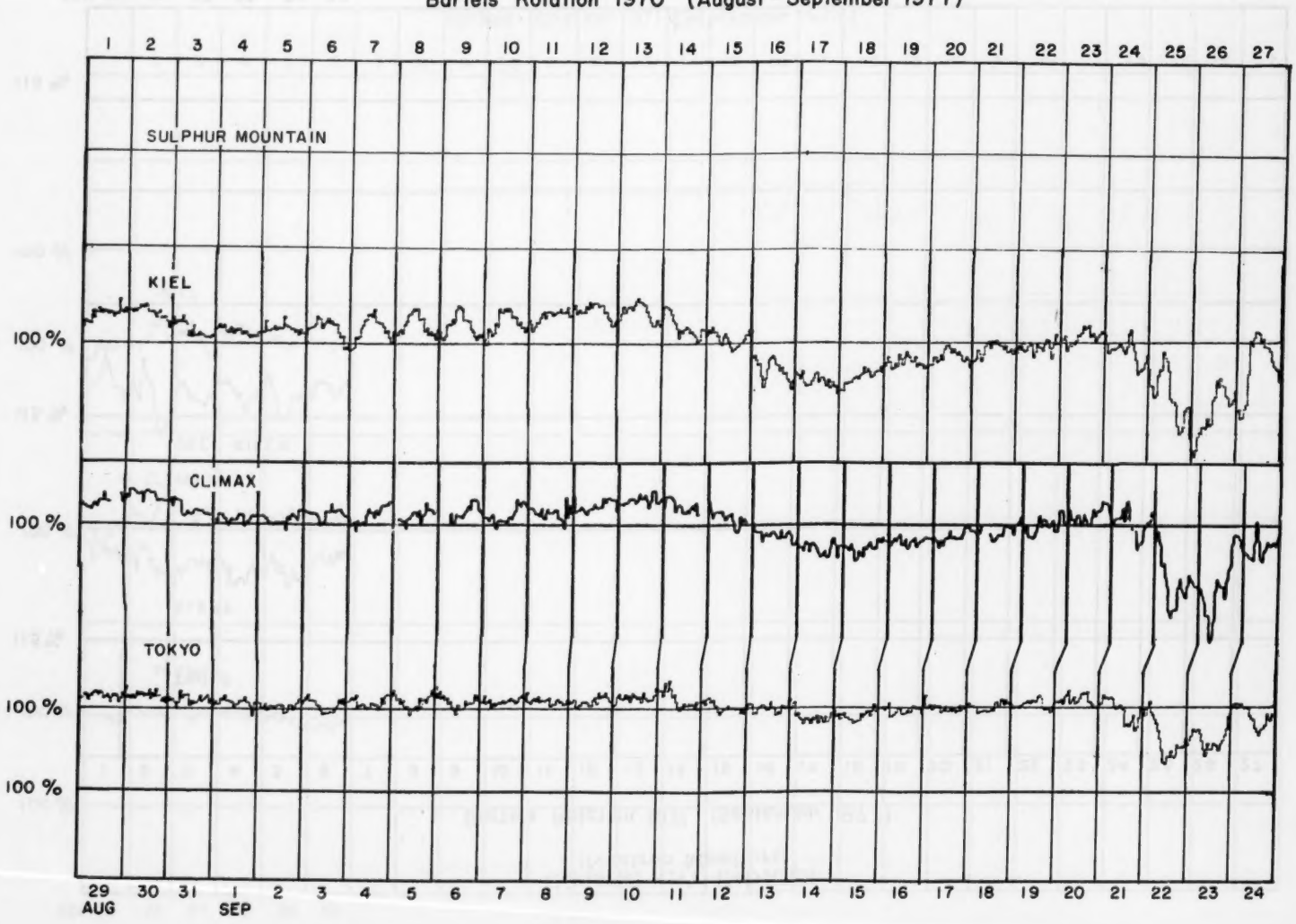




COSMIC RAY INDICES

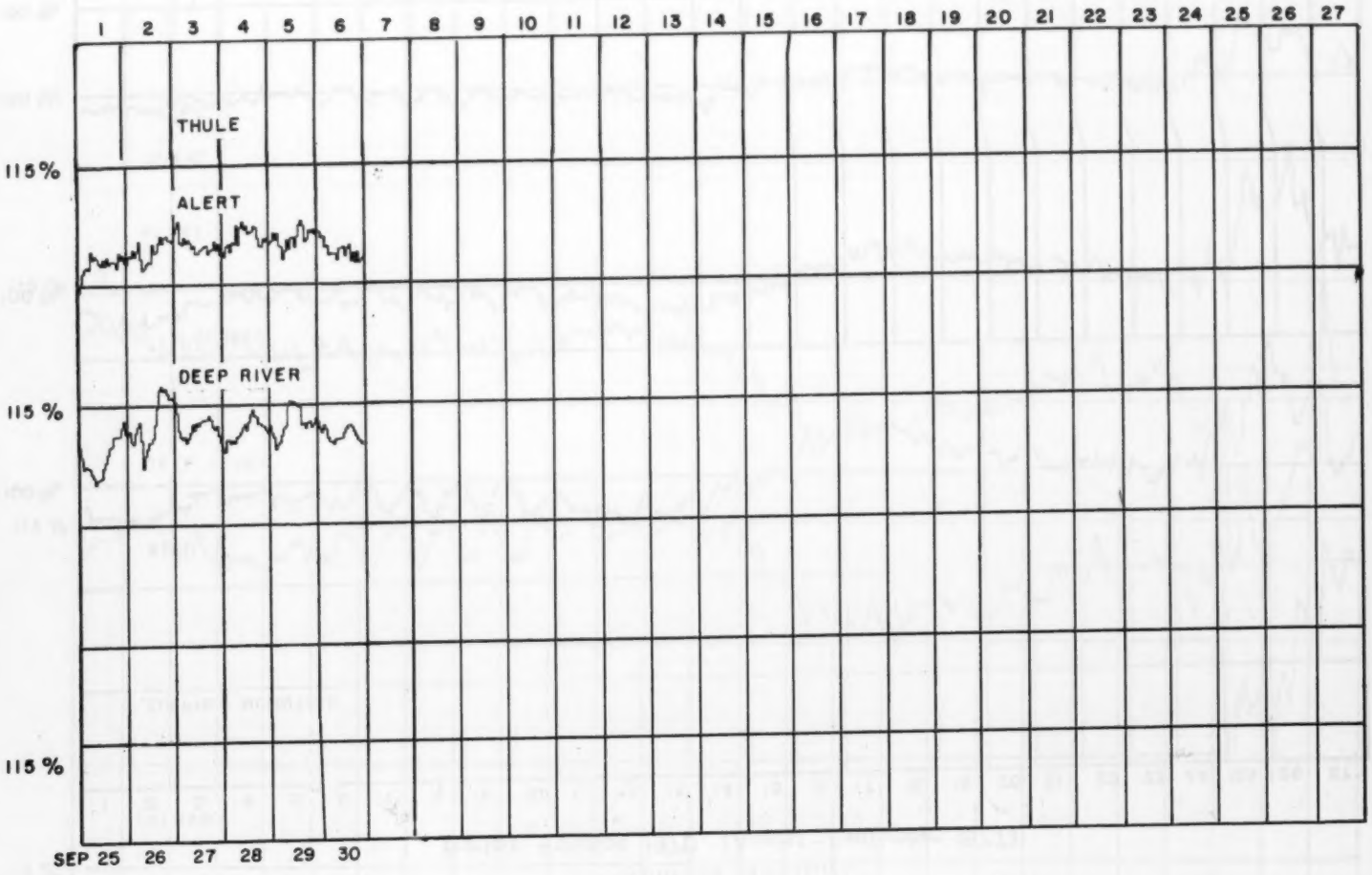
(Neutron Monitors)

Bartels Rotation 1970 (August - September 1977)



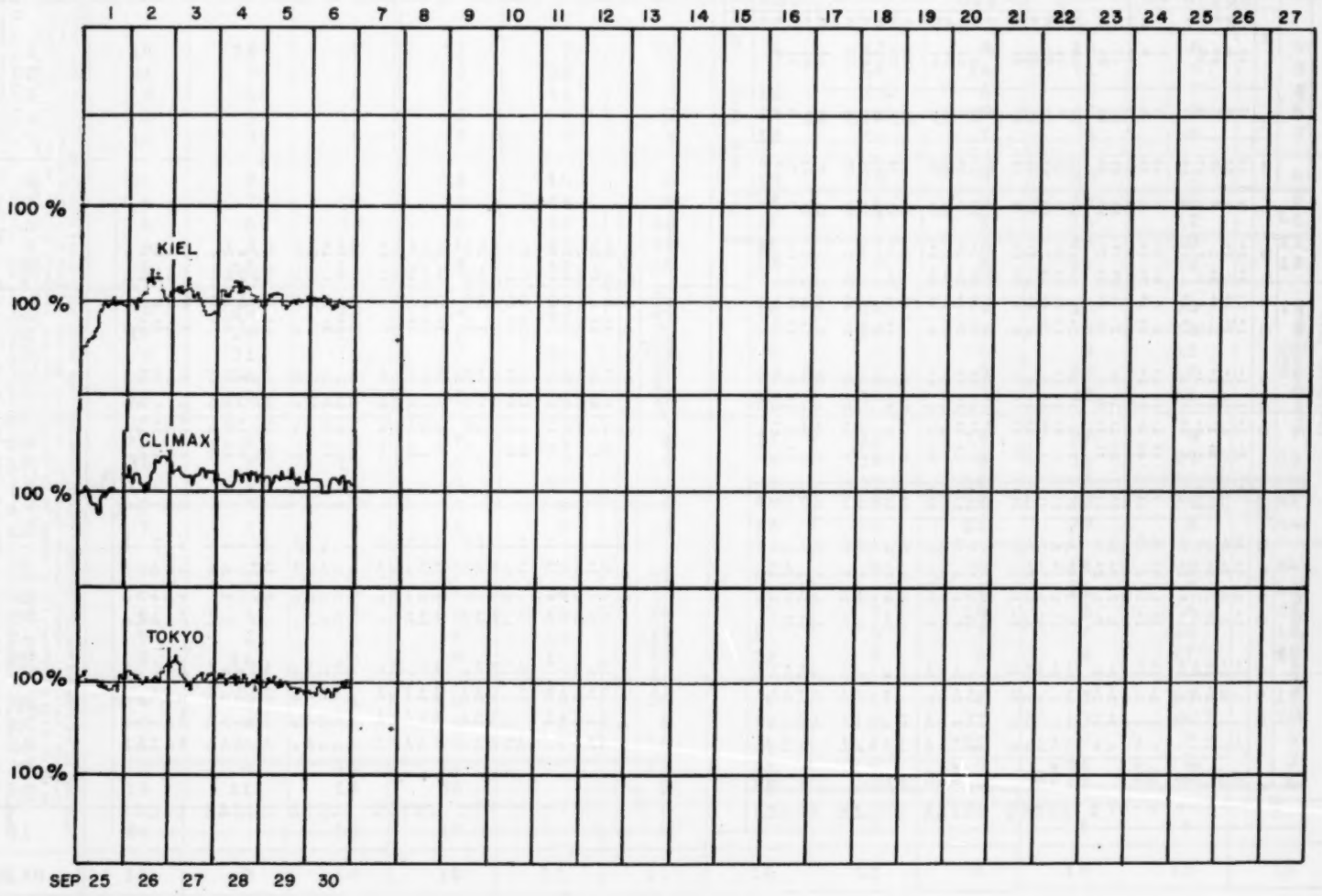
COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1971 (September 1977)



COSMIC RAY INDICES
(Neutron Monitors)

Bartels Rotation 1971 (September 1977)



GEOMAGNETIC ACTIVITY INDICES

SEPTEMBER 1977

Day	Three-Hourly Indices Kp									Three-Hourly Indices Km								Ap	aa *					Cp
		1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8		N	S	M			
1	Q4	2-	1	1	1-	1+	1-	0+	1-	7+	2-	1+	1	1-	1+	0+	0+	1-	4	13	3	10	6	CC	0.1
2	Q6	1	1	0+	1-	2	2+	2-	3-	12-	1	1	1-	1-	2-	2+	2	3-	6	18	8	6	28	KK	0.3
3		3+	3+	2-	1+	1+	1	1-	1	14-	3+	3	2-	1+	1	1-	0+	1	8	20	7	18	9	K	0.4
4	Q9K	1	1+	3-	3-	2-	1+	1-	1	12+	1	2-	3-	3-	2	1	1	1	6	15	8	15	9	CC	0.3
5	Q1	1	0+	0	1+	1+	0+	1-	1-	6-	1	1-	0+	1	1+	0+	1	1-	3	8	5	7	7	CC	0.1
6	Q2	0	1	1-	1+	1+	1	0+	1+	7	0+	1	1	1+	1	1	1-	2-	4	10	4	7	8	CC	0.1
7	Q7K	1-	2	1	0+	1-	1-	2	3+	11-	0+	2-	1-	1-	0+	1-	2-	3+	6	16	6	6	17	KK	0.3
8		3	2	3	1+	1+	1+	2-	2	16-	3-	2	3-	1+	1+	1	1+	2	8	15	8	13	11	C	0.4
9		2	3-	3-	3-	3	3	3-	1+	20	2-	2+	3-	3-	3	3-	3-	1+	11	21	15	15	22		0.6
10		4-	3+	2+	3	3-	1+	2+	3-	21+	3+	3-	2+	3	3-	2-	2+	3-	13	28	18	26	20		0.7
11		3+	4-	4-	4-	3	3+	4-	3-	27	3	3	3+	3+	3-	3	3+	2+	19	29	23	24	28		1.0
12	Q8K	1-	3	1	0+	1-	1-	1+	3	11-	1	3-	1+	0+	1-	1-	1+	3-	6	12	7	11	9	C	0.3
13	D5	4-	3-	4	4-	4-	5	5+	3+	31+	3	2-	3+	4	3+	4+	4+	3	28	47	32	30	49		1.2
14		4	4-	1	1+	1	1+	2-	2-	16-	4-	3-	1-	1	1	1+	2	2-	10	18	10	21	9		0.6
15		2	3	3+	3+	2-	1-	1-	1-	15+	2-	3-	3-	3+	2	1	1-	1+	9	18	12	21	9	K	0.5
16		1	1+	1+	2	3-	2	3-	2	15	1	1+	1+	2	2	2-	3-	2-	7	20	6	9	18	KK	0.4
17		2+	3-	4+	2	2-	1+	1-	1-	16-	2	2+	4-	2+	2+	2-	1-	1-	10	15	10	17	9	K	0.5
18	Q0K	1+	3	2-	2-	2	1-	1	1+	13-	1+	2+	2-	2-	2-	1-	1-	1+	6	16	6	13	10	CK	0.3
19	D4	1	1-	1	4	6	6-	6	6-	30	1-	1-	1+	3+	5	5-	5+	5	42	60	40	16	84		1.5
20	D3	6-	5-	5	5-	5	5+	4	4	38+	5-	4	4	4-	4	4+	4-	4-	44	56	42	41	57		1.5
21	D2	4+	5+	6	7-	5-	3-	4+	7+	41+	3+	4+	5	6-	4	2+	4-	6-	64	69	51	73	46		1.7
22	D1	6+	6	4+	4	5-	6+	7-	4	42+	5	5	4-	4	4+	5+	6-	4-	63	78	69	72	75		1.7
23		3-	1+	1	4-	4	5	4+	3+	25+	2+	1	1	3	4	4	4	3	21	33	22	15	48		1.1
24		3	4-	2+	3	2	3-	2	3-	21+	2+	3-	2	3-	2-	3	2	3-	12	28	10	19	19		0.7
25		2+	3-	3-	2+	1+	2+	3	2+	19	2	2-	2+	2+	2-	2-	3-	2	10	22	10	13	19		0.6
26		1	2-	2+	4	3	4	3	5-	24-	1	2-	2	3+	3	4-	3	4	18	37	20	12	45		1.0
27		6-	6-	4+	2+	1+	1-	1	1-	22-	5	5-	4-	2+	1+	1-	1	1	24	31	17	41	8		1.1
28		1+	1+	3-	2+	2+	4-	2-	1	16+	1+	1	2+	3-	2+	3+	2-	1+	9	21	9	13	18	K	0.5
29	Q3	0	2-	2-	0+	0+	1	1	1-	7-	0	1+	2-	1-	0+	1-	1	1	3	7	4	5	6	CK	0.1
30	Q5	1-	1-	1-	2-	2	1-	1	1-	8	1-	1	1	1+	2	1+	1+	1-	4	8	7	7	9	CC	0.1
																			16	26.3	16.3	21.4			0.66

Day	Three-Hourly Indices Kn								Three-Hourly Indices Ks							
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
1	1+	1-	1+	1+	2-	1-	1-	1	2-	2	1	0+	1-	0	0	0+
2	1+	1	1-	1	2-	3-	2+	3	1	1	0+	1-	1+	2	2-	2+
3	3-	3-	2-	2-	1+	1	0+	1	4-	4-	2-	1+	0+	0+	0+	1
4	1-	2-	3-	3	2+	1+	1+	1	1+	2-	3-	2+	2-	1-	1-	1
5	1	1-	0+	1+	2-	0+	1+	1-	1+	1-	1-	1	1+	0+	1-	1-
6	0+	1	1+	2-	1+	1+	1+	1+	0+	1	1	1	1-	1-	0+	2-
7	0+	2-	1	1-	1-	1	2-	3	0+	2-	0+	0+	0+	0+	2	3+
8	3-	2-	3	1+	2-	1+	1+	2	3	2	2+	1+	1	1	1+	2-
9	1+	2+	3-	3-	3+	3	3-	2-	2	2	2+	3-	3	2+	3-	1+
10	3	3-	3-	3	2+	2-	3-	3-	4-	3-	2+	3+	3-	2-	2	3-
11	3-	3+	4-	3+	3-	3	3+	3-	3+	3	3+	3+	3-	3+	4-	2+
12	1-	3-	1+	0+	0+	1	1+	3-	1	3-	1	0+	1-	1-	1+	2+
13	3-	2-	4-	4	3+	4+	4	2+	3+	2-	3-	4-	3+	5-	4+	3+
14	3+	3-	1-	1+	1+	2-	2	2-	4-	3-	1-	1	1	1-	2	1+
15	1+	3-	3-	3	2	1	1-	1+	2-	3-	2+	3+	2	1	1-	1+
16	1	1+	1+	2	2+	2-	3-	2	1	1+	1+	2-	2-	1+	2+	2-
17	2	2+	4+	2+	2+	2-	1	1	2-	2	3+	2	2+	2-	0+	1-
18	1	2+	2-	2	2	1	1-	2-	1+	2+	2-	1+	2-	0+	1-	1+
19	1-	1-	1+	4-	5+	5	5	5	1-	1-	1+	3	5-	5-	5+	5
20	5	4	4+	4	4	5-	4-	4-	5-	4-	4	3+	4	4+	4-	4-
21	3+	5-	5+	6-	4	3-	3+	6-	4-	4+	4+	6	4+	2	4-	6-
22	5	5	4-	4-	4	5+	5+	3+	5	5	3+	4	4+	5+	6-	4
23	3-	1	1+	3	4	4+	4	3	2+	1+	1-	3	4+	4-	4-	3
24	3-	3	2	3	2	3	2	3	2+	2+	2-	2+	2-	3-	2-	3-
25	2-	2-	3-	2+	2-	2+	3-	2	2+	2	2-	2+	1+	1+	3-	2
26	1-	2-	2	4-	3+	4	3	4	1	1+	2-	3-	3	4-	3-	4-
27	5-	5-	4-	2	2-	1	1	1	5	5-	4	3-	1+	1-	1-	1
28	1+	1	3-	3-	3-	4-	2-	1+	1+	1+	2	3-	2+	3	2-	1+
29	0	1	2	0+	0+	1	1	1	0+	1+	1+	1-	0+	0	1+	1
30	0+	1-	1	1+	2	1+	1+	1-	1	1	1+	1+	2	1+	1+	1

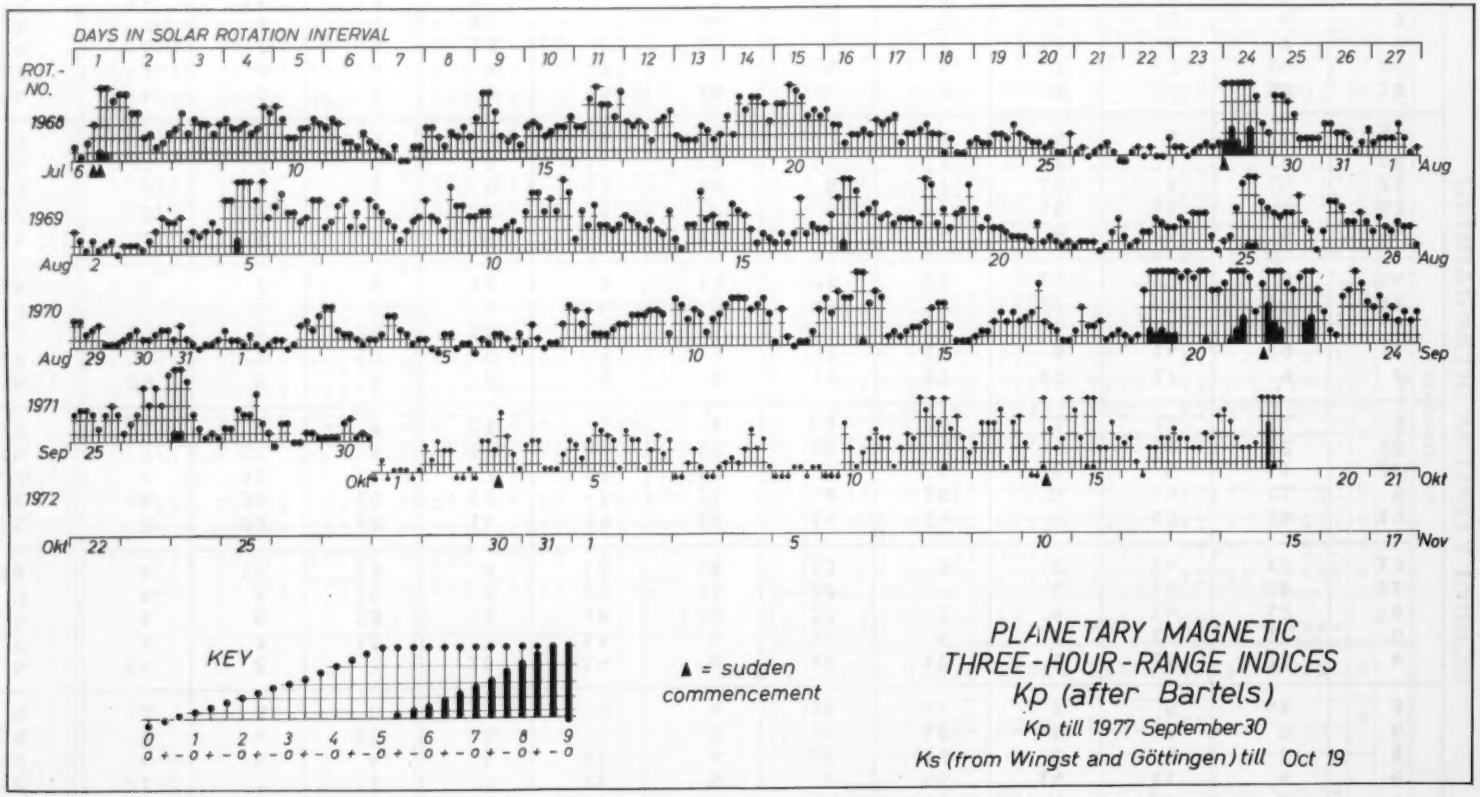
Quiet days (Q) and disturbed days (D), geomagnetic planetary three-hour-range indices (Kp) (integers alone are equivalent to those normally given with a small zero), magnetic character figures (Cp), and average amplitude (Ap) (unit 2γ) prepared by Geophysikalisches Institut at the University of Göttingen, F.R. of Germany for the International Service of Geomagnetic Indices. Ten most quiet days (Q1-Q0(10)] and five most disturbed days [D1-D5] are ordered from most quiet or disturbed, respectively. A or K means "not really quiet" (A = "Ap>6", K = "Ap ≤6 but one Kp ≥3o or two Kp values ≥3-"). An * means "not really disturbed" (Ap<20).

Geomagnetic three-hourly indices (Kn), (Ks) and (Km) as in IAGA-Bulletin No. 32 and indices (aa), "antipodal", as in IAGA-Bulletin No. 33 prepared by P. N. Mayaud of the Institut de Physique du Globe, Paris, France. Really quiet (C) and quiet but slightly disturbed three-hourly intervals (K) are given for 24-hour and 48-hour intervals centered on 12 UT.

DAILY AVERAGE INDICES Ap

	1976			1977								
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	10	7	17	7	11	4	13	9	15	6	4
2	21	7	3	5	21	5	5	66	14	11	4	6
3	9	6	4	6	11	4	12	15	6	9	7	8
4	6	4	15	10	4	3	24	19	5	8	9	6
5	13	3	6	15	9	4	12	11	7	5	40	3
6	11	2	3	10	14	6	49	10	5	28	21	4
7	6	3	10	7	18	5	48	6	6	15	17	6
8	6	6	23	6	18	12	27	3	6	14	12	8
9	6	8	16	6	25	38	22	7	6	16	20	11
10	6	18	13	3	12	19	13	9	8	14	12	13
11	8	23	13	14	13	18	14	24	4	10	28	19
12	14	24	15	12	7	22	8	19	4	4	11	6
13	8	31	8	7	12	13	5	6	6	9	11	28
14	7	16	4	18	11	12	12	8	9	18	12	10
15	33	9	2	13	8	5	10	14	3	12	11	9
16	29	5	8	7	6	6	17	22	10	27	9	7
17	30	7	10	6	9	9	9	18	8	14	29	10
18	19	5	28	10	17	11	8	11	10	7	13	6
19	7	9	7	8	6	5	48	5	10	23	24	42
20	7	7	5	12	5	13	28	10	11	29	8	44
21	7	4	4	5	7	10	12	4	6	10	5	64
22	5	5	8	7	8	7	6	7	10	11	5	63
23	6	4	5	6	18	14	5	7	10	6	6	21
24	6	3	6	8	14	12	11	8	7	7	10	12
25	5	11	9	9	11	12	22	5	5	5	27	10
26	4	9	6	4	8	16	4	2	6	3	13	18
27	7	8	6	4	3	8	4	4	7	3	14	24
28	5	2	6	13	7	15	4	7	12	4	7	9
29	3	6	45	15		14	18	2	7	61	6	3
30	16	11	13	30		5	8	5	9	17	5	4
31	34		12	19		4		7		8	4	
MEAN	12	9	10	10	11	11	16	11	8	14	13	16

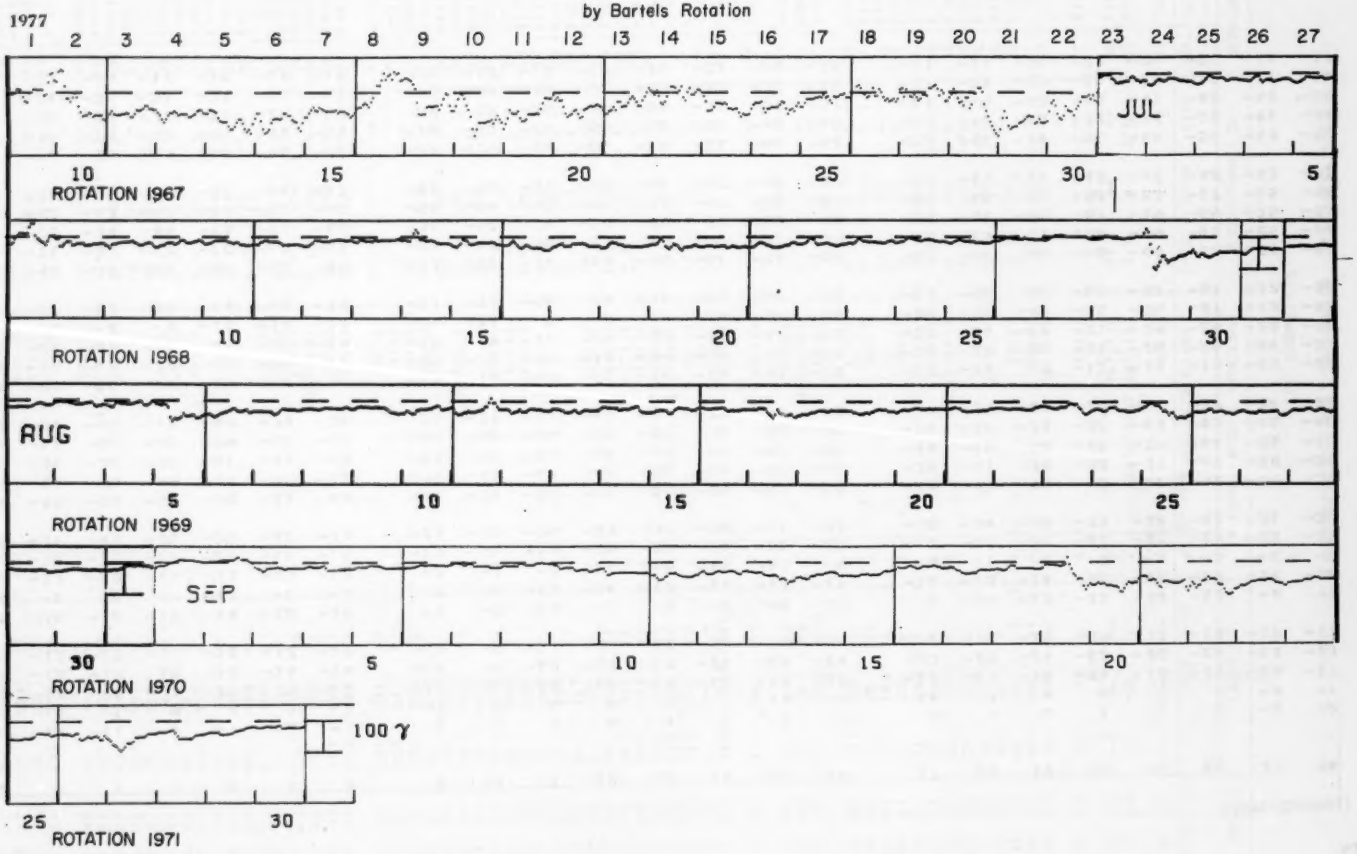
GEOMAGNETIC ACTIVITY INDICES



GEOMAGNETIC ACTIVITY INDICES

Hourly Equatorial Dst

by Bartels Rotation



Note the sensitivity indicator for each month on the last day of the month and also note that the zero reference level is different for each month.

HOURLY EQUATORIAL Dst VALUES (PROVISIONAL)

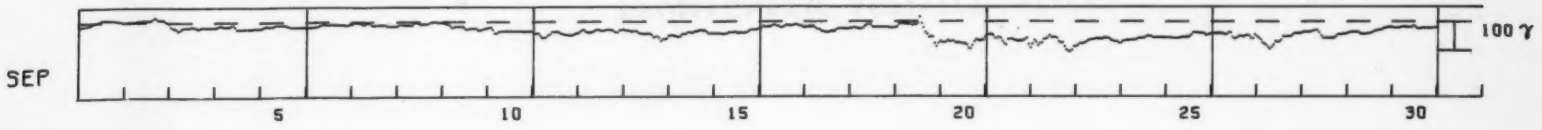
NASA/GODDARD SPACE FLIGHT CENTER

SEPTEMBER 1977

(Time-UT)

(Units-Gammas)

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-14	-10	-11	-11	-9	-7	-3	-1	0	3	5	9	9	6	5	4	5	6	3	1	1	0	-2	-2
2	1	3	3	1	0	2	5	7	7	9	5	4	4	7	11	15	16	7	6	5	5	0	-3	-7
3	-16	-21	-23	-26	-31	-25	-19	-17	-16	-16	-16	-13	-19	-19	-23	-21	-17	-17	-17	-17	-18	-18	-20	-17
4	-16	-13	-12	-15	-18	-18	-14	-14	-12	-9	-18	-28	-27	-24	-23	-24	-23	-22	-24	-22	-20	-20	-22	-23
5	-19	-15	-13	-15	-17	-16	-13	-10	-10	-9	-11	-13	-12	-16	-19	-21	-20	-19	-18	-18	-17	-18	-17	-17
6	-17	-17	-16	-16	-15	-14	-12	-10	-7	-8	-10	-9	-8	-8	-8	-9	-9	-10	-11	-12	-13	-11	-8	-7
7	-3	-1	-1	-5	-7	-12	-9	-4	-7	-8	-13	-14	-13	-11	-13	-14	-13	-13	-18	-16	-19	-17	-17	-18
8	-12	-9	-13	-12	-11	-11	-13	-12	-3	-1	-7	-11	-8	-10	-10	-8	-4	-1	-1	0	-3	-5	-5	-3
9	-5	-10	-10	-15	-22	-20	-16	-15	-19	-18	-19	-26	-29	-24	-23	-23	-23	-24	-32	-32	-27	-24	-22	-21
10	-18	-19	-31	-41	-39	-35	-32	-31	-34	-30	-34	-33	-32	-32	-31	-32	-33	-34	-36	-35	-32	-32	-31	-37
11	-41	-43	-42	-50	-57	-55	-51	-44	-41	-36	-33	-36	-32	-38	-43	-45	-46	-47	-48	-49	-47	-42	-38	-38
12	-33	-28	-26	-35	-38	-37	-36	-33	-29	-26	-29	-33	-33	-29	-27	-26	-29	-31	-35	-38	-39	-27	-28	-25
13	-32	-31	-34	-36	-33	-31	-34	-39	-43	-43	-44	-39	-39	-41	-47	-55	-49	-49	-58	-68	-59	-61	-56	-49
14	-45	-44	-51	-52	-55	-49	-42	-40	-40	-36	-36	-38	-37	-32	-32	-29	-28	-32	-33	-37	-43	-43	-40	-40
15	-40	-39	-39	-44	-45	-40	-39	-36	-36	-37	-34	-40	-41	-39	-39	-40	-37	-33	-28	-26	-27	-27	-24	-23
16	-20	-14	-20	-16	-17	-15	-12	-10	-15	-18	-22	-21	-16	-12	-13	-16	-15	-12	-9	-12	-15	-16	-20	-22
17	-19	-18	-15	-15	-20	-25	-29	-29	-35	-37	-38	-38	-34	-33	-32	-32	-26	-23	-22	-24	-26	-26	-24	-22
18	-22	-19	-21	-25	-28	-26	-21	-14	-10	-9	-14	-20	-22	-19	-22	-22	-20	-22	-21	-21	-24	-24	-22	-20
19	-17	-8	-6	-8	-8	-11	-10	-11	-14	-11	-9	-5	15	-10	-24	-39	-45	-55	-49	-55	-76	-87	-73	-65
20	-71	-73	-67	-62	-69	-64	-66	-74	-71	-74	-76	-78	-77	-82	-92	-94	-81	-68	-62	-65	-67	-61	-62	-52
21	-43	-44	-45	-49	-59	-59	-52	-59	-67	-77	-81	-60	-58	-61	-64	-66	-67	-65	-65	-66	-60	-55	-80	-91
22	-75	-63	-71	-83	-73	-70	-60	-57	-53	-47	-56	-51	-54	-59	-70	-74	-70	-87	-97	-103	-99	-95	-85	-82
23	-79	-73	-72	-74	-69	-65	-61	-60	-59	-57	-56	-58	-58	-57	-53	-53	-54	-60	-65	-67	-69	-69	-75	-73
24	-65	-63	-62	-63	-61	-61	-61	-60	-56	-54	-55	-56	-51	-47	-48	-53	-56	-56	-52	-52	-53	-57	-55	-56
25	-55	-57	-58	-59	-58	-55	-54	-52	-51	-52	-53	-49	-44	-37	-36	-37	-39	-41	-40	-42	-49	-42	-43	-38
26	-41	-42	-40	-39	-41	-43	-46	-41	-36	-39	-56	-61	-55	-51	-46	-52	-54	-46	-44	-51	-60	-56	-43	-52
27	-58	-63	-74	-78	-82	-85	-95	-86	-78	-69	-70	-66	-61	-51	-49	-48	-48	-48	-43	-38	-38	-39	-41	-37
28	-34	-34	-34	-35	-33	-30	-28	-28	-38	-50	-58	-56	-54	-55	-59	-57	-54	-49	-42	-43	-41	-40	-40	-38
29	-36	-35	-34	-35	-34	-37	-42	-45	-43	-40	-39	-38	-37	-32	-30	-28	-27	-27	-23	-20	-19	-18	-17	-18
30	-23	-24	-23	-19	-17	-16	-17	-19	-20	-18	-13	-17	-24	-23	-22	-20	-21	-21	-21	-23	-24	-20	-18	-17



PRINCIPAL MAGNETIC STORMS

SEPTEMBER 1977

OBS. 2 letter IAGA code	GEOMAG-NETIC LATI-TUDE	COMMENCEMENT DAY	hr min (UT)	TYPE	SC - AMPLITUDES D(')	H(γ)	Z(γ)	MAXIMUM 3 HOUR - INDEX K DAY(3 HOUR PERIOD)	K	RANGES D(')	H(γ)	Z(γ)	UT END DAY	HOUR
KG	56.5S	2	1751	SC	--	--	--	03(2)	4	--	--	--	03	12
HD	07.6N	7	2110	SC	- 0.2	+ 6	- 1	08(1,2) 09(4,5,7)	3	7	83	35	09	21
KG	56.5S	7	1821	SC	--	--	--	07(7,8)	3	--	--	--	08	09
HU	00.6S	8	1210	..	..	..	..	09(6)	5	5	207	21	09	21
WI	54.2N	12	21--	..	..	..	..	13(6,7)	6	29	150	55	13	22
FR	49.6N	12	21--	..	..	..	..	13(3)	5	19	80	40	15	16
BD	48.9N	12	2115	SC	+ 1	+16	- 2	13(3)	5	17	94	39	14	06
JP	17.3N	12	2113	SC	- 0.6	17	- 3			8	70	43	14	11
SH	14.6N	12	2113	SC	- 0.4	14	2			7	68	29	14	11
UJ	13.5N	12	2113	SC	- 0.4	19	- 4			7	77	42	14	11
AL	09.5N	12	2113	SC	- 0.5	15	- 4	13(6,7)	5	6	84	50	14	11
HD	07.6N	12	2113	SC	- 0.3	+16	- 1	13(6,7)	5	6	103	43	14	06
AN	01.5N	12	2113	SC	- 0.7	19	11			5	143	77	14	11
HU	00.6S	12	2113	SC	1	19	5	13(6)	5	5	152	32	13	22
TV	01.1S	12	2113	SC	--	16	18			4	183	61	14	11
HR	33.7S	12	2114	SC	+ 1	+14	+ 8	13(7)	5	13	97	55	13	24
GN	43.3S	12	2112	SC	+ 0	+ 9	+ 1	13(7)	6	16	50	100	13	22
CO	64.6N	13	06--	..	..	..	..	13(4)	7	220	1040	740	14	06
IR	41.0N	13	0400	..	..	..	..	13(4,6,7)	5	21	95	28	14	06
TO	46.7S	13	11--	..	..	..	..	13(4)	5	17	113	73	14	05
NE	55.1N	16	06--	..	..	..	..	17(3)	6	28	89	71	17	15
CO	64.6N	19	08--	..	..	..	..	21(4)	8	362	2010	1280	23	03
SI	60.0N	19	12--	..	..	..	..	21(4)	8	--	--	--	22	23
NE	55.1N	19	0535	..	..	..	..	21(4)	7	60	342	631	21	18
WI	54.2N	19	11--	..	..	..	..	19(5,7,8) 21(4)	6	43	225	100	21	14
FR	49.6N	19	11--	..	..	..	..	20(1) 21(4,8) 22(1)	6	54	176	158	24	13
BD	48.9N	19	11--	..	..	..	..	21(4)	7	51	195	202	23	03
IR	41.0N	19	1142	SC*	+ 1	+30	+ 5	21(4)	7	30	150	85	21	15
SJ	29.9N	19	0843	SC	- 1	+13	+ 3	19(7)	6	11	124	41	21	14
HO	21.1N	19	1140	..	..	..	..	05(4)	4	8	14	6	20	23
JP	17.3N	19	1138	SC	- 0.2	27	- 5			9	172	50	21	15
SH	14.6N	19	1138	SC	- 0.4	25	2			7	160	33	21	15
UJ	13.5N	19	1138	SC	- 0.1	32	- 7			8	182	50	21	15
AL	09.5N	19	1138	SC	- 0.3	24	- 4	19(5)	7	7	160	49	21	15
HD	07.6N	19	1140	SC	- 0.1	+27	- 1	19(5)	7	7	188	32	21	15
GU	04.0N	19	1141	..	..	..	..	19(5)	6	10	130	30	21	13
AN	01.5N	19	1138	SC	- 0.8	30	21			5	176	77	21	15
HU	00.6S	19	1144	SC	2	54	4	19(6,7)	6	10	320	69	22	23
TV	01.1S	19	1138	SC	--	24	29			5	194	115	21	15
PM	18.7S	19	----	..	..	..	..	22(1)	6	6	140	60	23	06
HR	33.7S	19	1000	..	..	..	..	21(4)	6	31	140	109	21	15
GN	43.3S	19	11--	..				21(4)	6	19	70	130	21	14
TO	46.7S	19	11--	..	..	..	..	21(4)	6	28	168	127	22	22
NE	55.1N	21	2044	SC*	--	22	3	22(2)	6	51	186	232	24	18
WI	54.2N	21	2045	SC	- 4	+45	8	21(8)	7	37	300	185	24	01
IR	41.0N	21	2045	SC*	- 4.5	+20	+ 9	22(6,7)	6	26	171	53	23	03
SJ	29.9N	21	2045	SC	- .5	+19	+ 6	21(8)	6	11	115	41	23	04
HO	21.1N	21	2045	SC	2	6	3	22(3)	5	4	13	1	23	04
HO	21.1N	21	02--	..	..	..	..	21(3)	5	7	21	8	21	14
JP	17.3N	21	2043	SC	- 1.1	22	- 7			8	104	40	24	04
SH	14.6N	21	2043	SC	- 0.4	18	4			6	93	31	24	04
UJ	13.5N	21	2043	SC	- 0.6	26	- 6			7	124	37	24	04
AL	09.5N	21	2043	SC	- 0.7	20	- 6	22(6,7)	6	7	101	45	24	04
HD	07.6N	21	2043	SC	- 0.5	+18	- 2	22(6,7)	6	6	122	28	23	23
GU	04.0N	21	2044	SC	--	15	-05	21(8)	6	10	60	30	23	07
AN	01.5N	21	2043	SC	- 1.1	25	14			5	138	88	24	04
TV	01.1S	21	2043	SC	--	23	27			5	168	100	24	04
HR	33.7S	21	2044	SC	+ 2	+25	+17	22(7)	6	41	145	128	22	24
GN	43.3S	21	2044	SC	+ 3 *	+ 8	+17	22(4,6,7)	6	24	80	160	23	21
KG	56.5S	21	2044	SC	--	--	--	22(6)	8	--	--	--	24	06
NE	55.1N	26	03--	..	..	..	..	27(2)	7	47	111	167	27	13
FR	49.6N	26	23--	..	..	..	..	27(1)	6	22	99	57	27	11
BD	48.9N	26	04--	..	..	..	..	27(2)	6	28	104	60	27	12
HD	07.6N	26	0732	SC	0	+ 6	0	26(6,8)	4	6	103	41	27	14
GU	04.0N	26	0734	..	..	..	..	27(1)	5	10	120	50	27	14
PM	18.7S	26	0733	SC	0	+ 5	+ 4	26(4,6) 27(2)	5	4	100	50	27	21
HR	33.7S	26	2100	..	..	..	..	26(8) 27(1,2)	5	23	75	60	27	15

Reports were received from the following observatories:

Alibag Annamalainagar Boulder College Fredericksburg Gnangara Guam Hermanus Honolulu Huancayo Hyderabad Irkutsk Jaipur Kerguelen Newport Port Moresby San Juan Shillong Sitka Toolangi Trivandrum Ujjain Witteveen

SUDDEN COMMENCEMENTS AND SOLAR FLARE EFFECTS

SEPTEMBER 1977

PRELIMINARY REPORT ON RAPID MAGNETIC VARIATIONS (by Dr. A. Romaná)

The meaning of the station symbols is given in the IAGA-Bulletin nr. 32.
Times of ssc are mean values.

Sudden commencements followed by a magnetic storm or a period of storminess (ssc)

19 1143: A: CI HU; B: WN FU TL KA KY; C: EB DU
21 2044: A: DB VI CF CI AE HU LM; B: WN WI EB KA KY GN; C: MT CZ SS KG DU
(si: A: FU; B: TL)

Solar-flare effects (sfe)

Effects confirmed by ionospheric or solar observations are underlined.

07	2110 - 2120	HU	
14	0914 - 0935	NI	
15	0941 - 1015	NI	AE
18	1905 - 1912	HU	
21	1014 - 1105	NI	
24	1451 - 1500	TL	
26	0018 - 0020	SS	
27	0923 - 0936	NI	
28	1821 - 1832	HU	

Very unusual events

21 1001 - 1040 pi2 MT KA (bp: DU)
22 1531 - bp CZ KG DU

RADIO PROPAGATION QUALITY INDICES

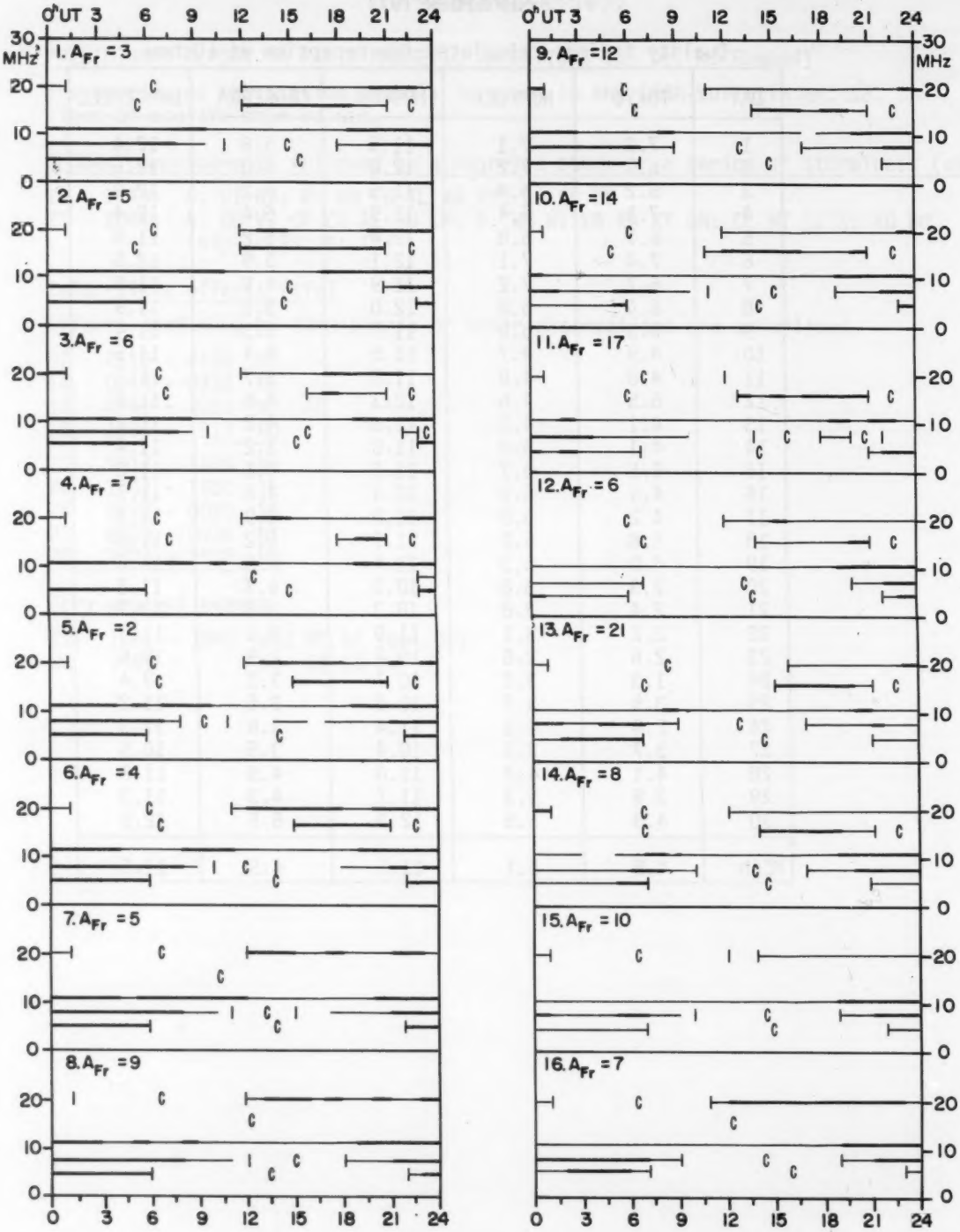
SEPTEMBER 1977

Quality indices calculated for reception at Lüchow

DAY	TOKYO	NORFOLK	MOSCOW	CANBERRA	BRACKNELL
1	7.3	7.1	11.9	5.8	12.4
2	6.7	7.2	12.0	6.0	12.6
3	6.2	6.4	11.5	6.2	12.0
4	7.1	6.4	11.9	6.4	12.4
5	6.7	6.8	12.4	5.2	11.9
6	7.4	7.1	12.1	5.9	12.5
7	6.7	7.2	11.9	4.9	11.8
8	6.6	6.6	12.0	5.2	11.9
9	6.3	5.0	11.7	5.3	11.4
10	4.9	4.7	11.5	4.4	11.5
11	4.8	4.0	11.8	3.7	11.7
12	6.5	4.6	12.3	4.6	11.7
13	4.1	4.3	11.8	4.8	11.2
14	4.1	5.3	11.0	3.2	11.4
15	5.5	5.7	11.5	4.6	11.2
16	4.9	6.9	12.4	3.8	11.7
17	4.2	5.0	11.8	4.9	11.4
18	5.8	6.2	11.7	5.2	11.6
19	4.0	5.3	11.4	4.8	11.6
20	2.3	3.8	10.3	4.7	11.3
21	2.4	3.8	10.3	3.3	10.7
22	2.2	3.1	11.0	3.0	11.1
23	2.6	2.8	10.2	2.9	10.6
24	1.3	3.2	10.7	3.2	9.4
25	3.5	3.3	11.0	2.5	11.2
26	2.8	4.1	11.4	3.8	11.3
27	3.7	3.3	10.4	3.5	10.5
28	4.1	4.2	11.8	4.9	11.8
29	3.9	5.3	11.7	4.3	11.3
30	4.8	5.5	12.3	5.5	12.0
MEAN	4.8	5.1	11.5	4.5	11.5

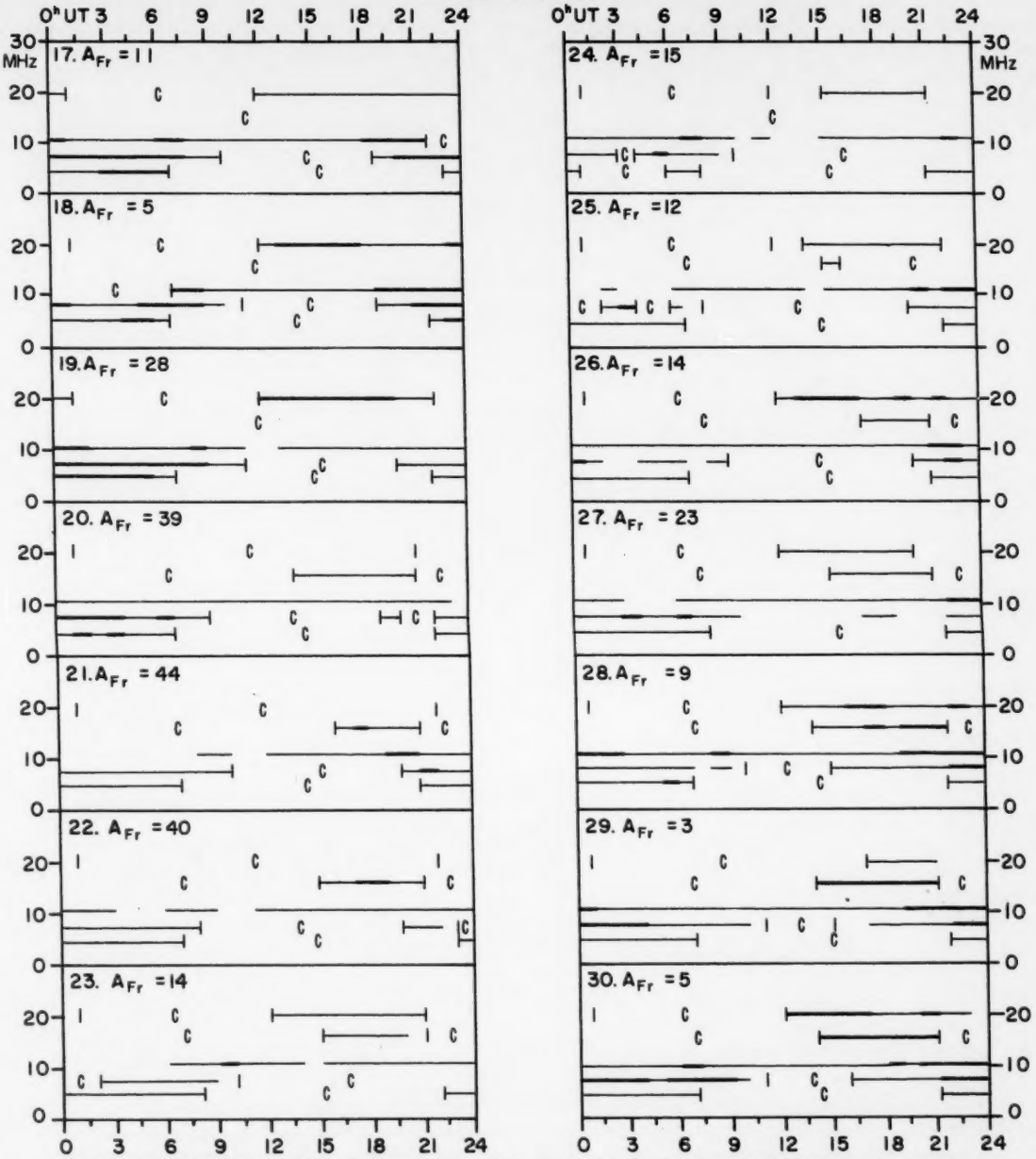
TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

SEPTEMBER 1977



TRANSMISSION FREQUENCY RANGES -- NORTH ATLANTIC PATH

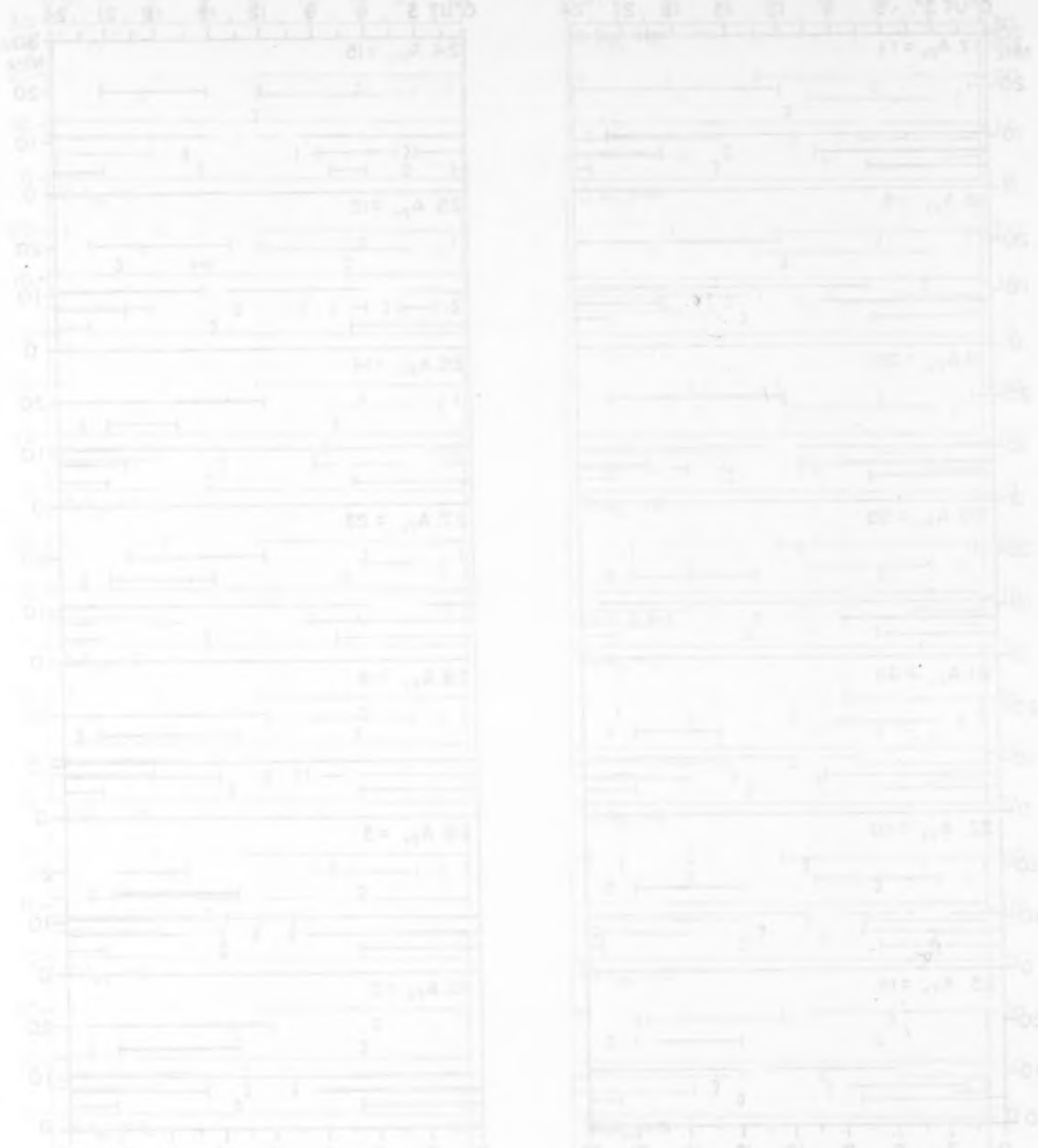
SEPTEMBER 1977



Field strengths from five frequencies, 5.0, 8.1, 10.9, 16.4 and 20.0 MHz, observed on a Lüchow - Norfolk circuit are represented above. Heavy solid lines represent field strengths ≥-12 dB above 1 μv/m (transmitter power reduced to 1 kW). Observed field strengths between -12 dB above 1 μv/m and -40 dB above 1 μv/m are represented by the fine line.

Adapted from Observations by Deutsche Bundespost

USCOMM-NOAA-ASHEVILLE, NC--12-2-77--950



November 1977 Number 399-Part II

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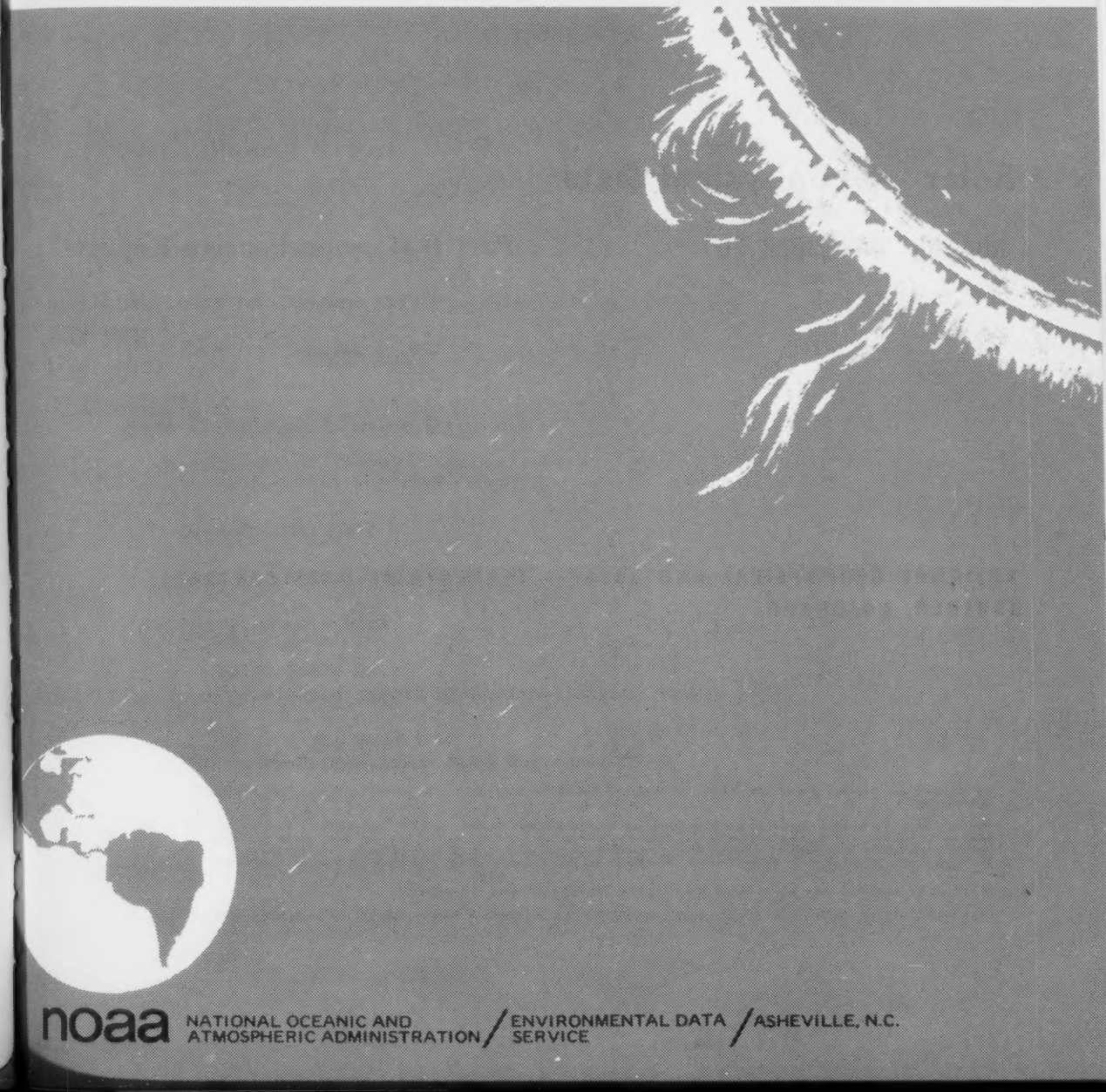
Solar-Geophysical Data comprehensive reports

Data for May 1977–April 1977 & Miscellanea

Explanation of Data Reports Issued as Number 390 (Supplement) February 1977



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Solar - Geophysical Data

NO. 399 NOVEMBER 1977

Part II (Comprehensive Reports)

DATA FOR
MAY 1977
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No. 399

Issued in two parts

Helen E. Coffey, Editor

J. Virginia Lincoln, Director
Solar - Terrestrial Data Services Division

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F.1e	Cosmic Ray Neutron Counts (Alert)	386A 99	387A103	388A103	389A 97	390A106	391A109	393B 44	393A109	394A110	395A114	396A110	397A109	398A116	399A115	
F.1f	Cosmic Ray Neutron Counts (Calgary)	386A 99	387A103	388A103	389A 97	390A106	393B 44	394B 36	394B 36	394A110	395A114	396A110	397A109			
F.1g	Cosmic Ray Neutron Counts (Sulphur Mountain)	386A 99	387A103	388A103	389A 97	390A106	393B 44	394B 36	394B 36	394A110	395A114	396A110	397A109			
F.1h	Cosmic Ray Neutron Counts (Thule)	----	----	----	----	----										
F.1i	Cosmic Ray Neutron Counts (Kiel)	386A 99	387A133	388A103	389A 97	390A106	391A109	392A 96	393A109	394A110	395A114	396A110	397A109	398A116	399A115	
F.1j	Cosmic Ray Neutron Counts (Tokyo)	386A 99	387A103	388A103	389A 97	390A106	391A109	392A 96	393A109	394A110	395A114	396A110	397A109	398A116	399A115	
F.1k	Cosmic Ray Neutron Counts (Kula)										395A114	396A110	397A109	398A116		
M.	Miscellaneous															
M.60	TUAUS Alert Decisions	385A 5	386A 5	387A 4	388A 5	389A 4	390A 4	391A 5	392A 5	393A 5	394A 5	395A 4	396A 5	397A 4	398A 4	399A 4
M.62	Abbreviated Calendar Record	391B 32	392B 26	393B 24	394B 26	395B 26	396B 28	397B 24	398B 34	399B 26						

Note: A = Part I, B = Part II.

386A 22 listed under 1976 Aug shows that data for August 1976 were contained in *Solar-Geophysical Data* Number 386 - Part I beginning on page 22.

MAY 1977 DATA

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ACTIVE REGIONS

CARRINGTON ROTATION 1654

(April 20 - May 17, 1977)

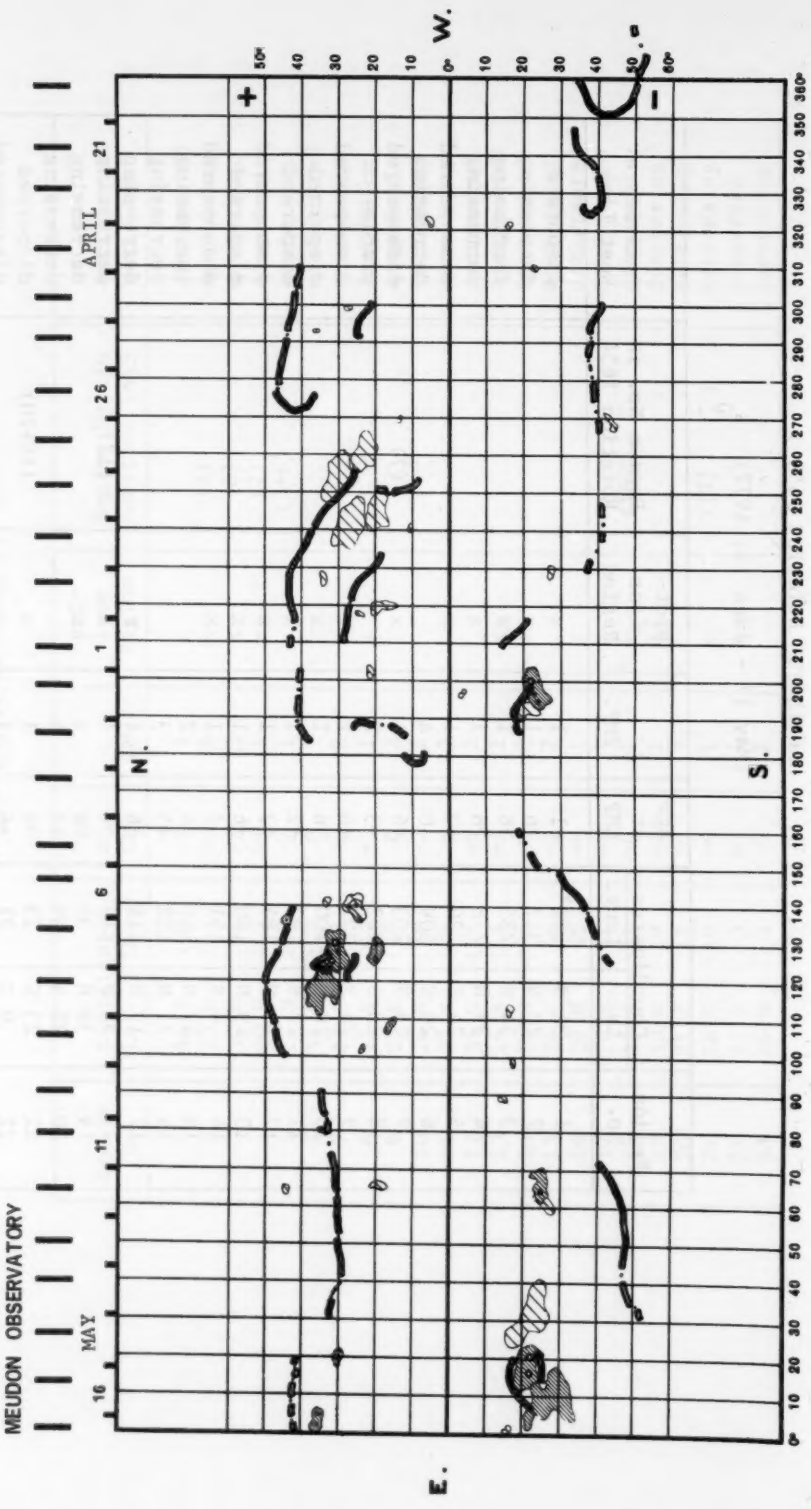
Region No.	Coordinates		Age at CMP	IMP.	Spot-less Region	Region No. in Rotation 1653	Activity at West Limb
	Lat.	Long.					
1	44°S	270°	-2	1	x		disappeared
2	23 N	261	>6	1	x	(5)	decreasing
3	30 N	254	>6	1	x	(6)	decreasing
4	20 N	245	>6	1	x	(7)	dispersed
5	27 N	242	>6	1	x	(5+6)	decreasing
6	34 N	227	0	1	x		disappeared
7	23 S	198	>6	2			decreasing
8	11 S	193	+3	1	x		decreasing
9	25 N	139	0	2			dispersed
10	20 N	128	-2	2			decreasing
11	32 N	128	>6	3			decreasing
12	35 N	118	+6	2			decreasing
13	16 S	112	+3	1	x		disappeared
14	16 N	108	-4	1	x		increasing
15	24 S	66	+1	2			decreasing
16	19 N	65	+4	1	x		disappeared
17	26 S	61	+4	1	x		disappeared
18	22 S	31	>6	1	x	(16)	dispersed
19	30 N	19	+2	1	x		decreasing
20	21 S	17	>6	3			decreasing
21	28 S	10	>6	1	x	(17)	decreasing
22	22 S	3	+3	1	x		dispersed
23	36 N	3	-4	2			increasing

ACTIVE REGIONS

CARRINGTON ROTATION 1655

(May 17 - June 13, 1977)

Region No.	Coordinates		Age at CMP	IMP.	Spot-less Region	Region No. in Rotation 1654	Activity at West Limb
	Lat.	Long.					
1	26°S	332°	-1	1	x		dispersed
2	20 N	317	>6	1	x		decreasing
3	34 N	285	>6	1	x		decreasing
4	39 N	278	>6	1	x		decreasing
5	24 S	239	+3	1	x		disappeared
6	20 N	209	0	4			decreasing
7	25 S	203	>6	1	x	(7)	disappeared
8	23 S	202	-3	2			stable
9	26 N	201	+6	1	x		disappeared
10	20 N	200	>6	1	x		dispersed
11	22 S	197	+2	1	x		dispersed
12	10 N	184	+3	1	x		disappeared
13	19 N	180	+6	1	x		dispersed
14	4 S	151	-2	1	x		disappeared
15	22 N	146	-4	2			increasing
16	21 N	122	+5	3			decreasing
17	19 N	116	>6	1	x		decreasing
18	32 N	114	>6	1	x	(12)	decreasing
19	39 N	94	>6	1	x		decreasing
20	25 S	65	+7	4			decreasing
21	23 S	23	>6	1	x	(18+20)	dispersed
22	9 S	21	+6	1	x		disappeared
23	22 S	3	>6	3			decreasing
24	29 S	1	>6	1	x	(21)	dispersed


SYNOPTIC SOLAR MAP
CARRINGTON ROTATION 1654
APRIL 20-MAY 16, 1977
MEUDON OBSERVATORY
MAY
APRIL
N.
S.
E.
W.
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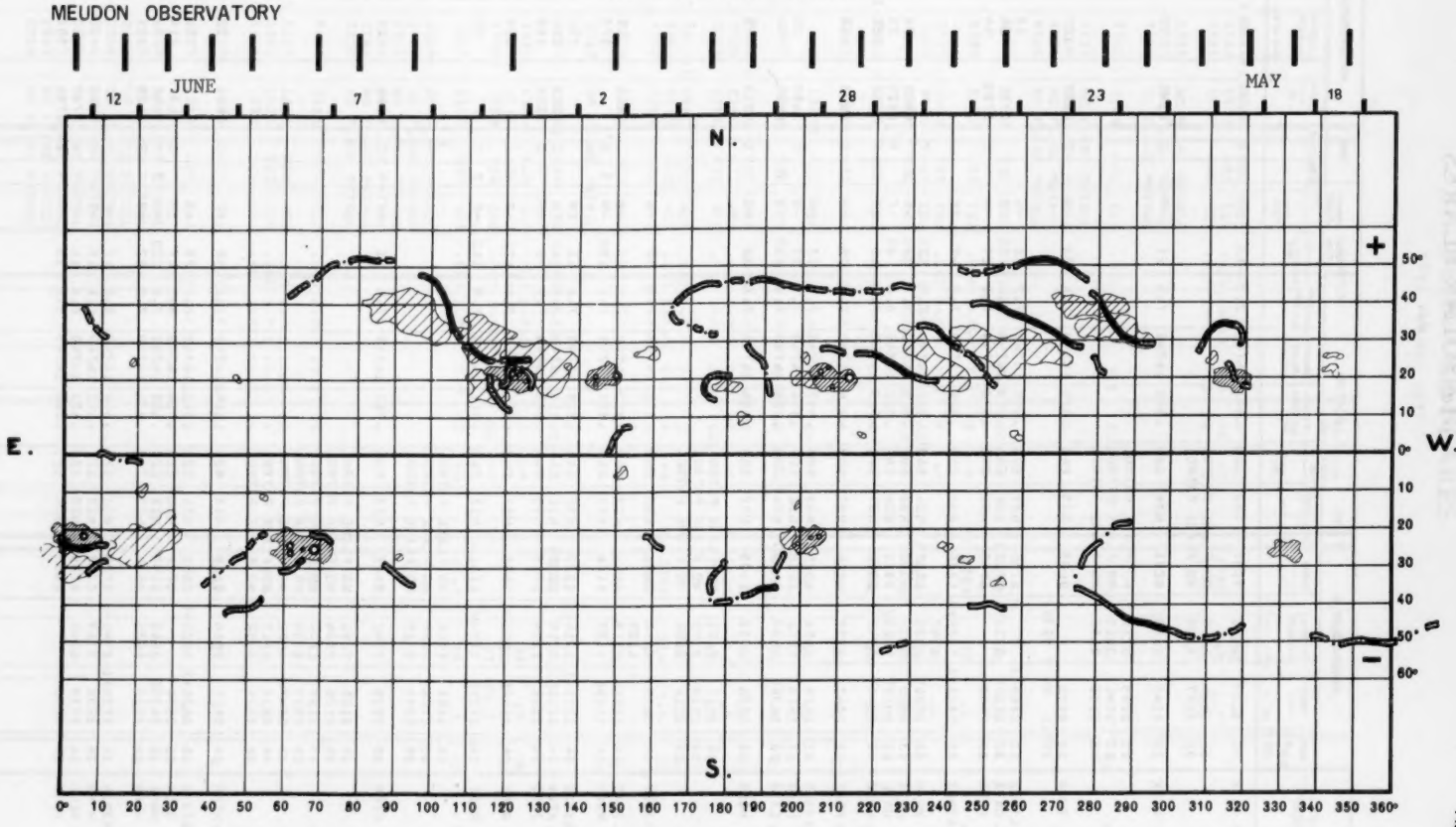
SYNOPTIC SOLAR MAP

CARRINGTON ROTATION 1655

MAY 17 TO JUNE 13, 1977



7
May 77

Hα SOLAR FLARES

MAY 1977

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS		MEASUREMENTS			REMARKS	
	DATE 1977 MAY	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Millionths of Disk	CORR AREA Sq. Deg.		
919 MITK	01	0219	0222	0232	S23	E19	.443	14742	2.5	13	-N		C	0222	50	.6	E	Y5
	01	2004	2145	NO FLARE PATROL														
	02	2057	2058	NO FLARE PATROL														
920 MITK	03	0140	0146	0201	N34	E64	.946	14749	7.9	21	-F		C	0146	60		D	Y5
	03	0209	0216	NO FLARE PATROL														
	03	0446	0459	NO FLARE PATROL														
	03	0500	0600	NO FLARE PATROL														
921 BUCA	03	0620		0653	N33	E60	.925	14749	7.8	33	N		C	0627	187	3.0		Y5
	IMP-1 NO. MITK2																	
GRP63922	03	0705+3		0735	N31	E59	.915	14749	7.7	30	-N				60	1.4	D	
CATA	03	0705E	0710	0710D	N31	E58	.909	14749	7.6	5D	-B	2		0710	56	1.3		
BUCA	03	0708		0735	N31	E60	.920	14749	7.8	27	-N		C	0709	64	1.7	D	
GRP63923	03	0920+5	0925+5 0942	1000	N33	E59	.920	14749	7.8	40	1F						E	
KHAR	03	0920E	0930	1007D	N34	E60	.927	14749	7.9	47D	1F		P				E	
CATA	03	0925	0925	1000D	N32	E57	.906	14749	7.7	35D	-N	2		0925	56	1.3		
UPIC	03	0925E	0929U	0931	N34	E61	.932	14749	8.0	6D	-F		P	0929	20	27.0		
UPIC	03	0942	0942	0952	N35	E58	.919	14749	7.8	10	1F		P	0942	122	157.0		
924 MONT	03	1048	1058	1124	N33	E58	.914	14749	7.8	36	-N		C	1058	110			Y5
GRP63925	03	1428	1458	1525	N33	E55	.897	14749	7.7	57	-N						E	
MCMA	03	1428	1450	1525	N32	E55	.894	14749	7.7	57	-N		C	1450	30	.5	E	
CATA	03	1430E	1430	1440D	N34	E56	.906	14749	7.8	10D	1N	2		1430	84	2.0		
926 MCMA	03	1756	1810	1835	N32	E54	.888	14749	7.8	39	-B		C	1810	60	1.1	EH	Y5
	03	2112	2120	NO FLARE PATROL														
	03	2138	2150	NO FLARE PATROL														
	03	2214	0206	NO FLARE PATROL														
GRP63927	04	1116	1116 1125	1141	N33	E45	.832	14749	7.8	25	-B							
ZURI	04	1116	1116	1144	N33	E45	.832	14749	7.8	28	-B		C	1116	50	1.0		
RAMY	04	1120E	1125	1138	N34	E45	.837	14749	7.8	18D	-N	3	C		178		FDE	
GRP63928	04	1211+1	1214+1	1222	N32	E44	.820	14749	7.8	11	1N				150	2.5	EI	
KIEV	04	1211E	1215	1225D	N31	E44	.814	14749	7.8	14D	1N		C	1215	200	3.4	EI	
ZURI	04	1212	1214	1218	N33	E45	.832	14749	7.9	6	-N		C	1214	100	1.9		
929 RAMY	04	1640E	1641U	1652	N33	E42	.811	14749	7.8	12D	-F	3	C		128		F	Y5
930 RAMY	04	1725E	1728U	1741D	N33	E42	.811	14749	7.9	16D	-F	3	C		96		FDE	Y5
	04	1808	1944	NO FLARE PATROL														
	05	0100	0155	NO FLARE PATROL														
	05	0309	0315	NO FLARE PATROL														
931 HTPR	05	0539	0542	0600	N33	E36	.767	14749	7.9	21	-F		C	0540	20	.3	E	Y5
	05	2100	2112	NO FLARE PATROL														
	05	2126	2134	NO FLARE PATROL														
	05	2148	2232	NO FLARE PATROL														
	06	0319	0338	NO FLARE PATROL														
	06	0347	0400	NO FLARE PATROL														
	06	0410	0417	NO FLARE PATROL														
	06	0425	0430	NO FLARE PATROL														
932 HTPR	06	0605	0606	0615	N33	E24	.684	14749	8.1	10	-F		C	0606	20	.3	E	Y5
GRP63933	06	0630+3	0635+5	0655	N34	E22	.682	14749	7.9	25	-N				120	1.6		
BUCA	06	0638		0717	N35	E24	.704	14749	8.1	47	1N		C	0637	214	3.1		
MANI	06	0633E	0640	0655	N33	E20	.660	14749	7.8	22D	-N	2		0640	80	1.1	F	
HTPR	06	0633	0635	0655	N33	E22	.671	14749	7.9	22	-B		C	0635	120	1.5	E	
GRP63934	06	0738+2	0740+5	0755	N33	E23	.677	14749	8.0	17	-F						E	
HTPR	06	0738	0740	0753	N33	E22	.671	14749	8.0	15	-F		C	0740	30	.3	E	
MEUD	06	0739	0745	0755	N33	E23	.677	14749	8.0	16	-F		C	0745	60	.8	E	
BUCA	06	0740		0805	N34	E23	.688	14749	8.0	25	-N		C	0744	187	1.5	E	

Hα SOLAR FLARES

MAY 1977

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE 1977 MAY	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg		
GRP63935	06	1519+2	1521+1	1533	N32	E09	.597	14749	7.3	14	-B				110	1.4		
MEUD	06	1519E	1522	1533	N32	E10	.601	14749	7.4	14D	-B		C	1522	140	1.7		
ZURI	06	1521	1521	1533	N32	E09	.597	14749	7.3	12	-B		C	1521	90	1.1		
	06	1921	1936	NO FLARE PATROL														
	06	1956	2009	NO FLARE PATROL														
	06	2033	2040	NO FLARE PATROL														
936 RAMY	06	2041E	2042	2049	N31	E05	.574	14749	7.2	8D	-F	2	C		95		DE	Y5
	06	2102	2112	NO FLARE PATROL														
	06	2134	2156	NO FLARE PATROL														
	06	2209	2221	NO FLARE PATROL														
	06	2227	0010	NO FLARE PATROL														
937 MANI	07	0249E	0251	0259	N31	E02	.568	14749	7.3	10D	-F	2		0251	40	.5		Y5
938 CULG	07	0305	0309	0325	N31	E02	.568	14749	7.3	20	-F		C	0309	30	.4		Y5
GRP63939	07	0451	0455	0459	N32	E01	.582	14749	7.3	8	-F				35	.4		
CULG	07	0451	0455	0459D	N32	E02	.582	14749	7.4	8D	-F		P	0455	45	.5		
HTPR	07	0455E		0459	N32	E01	.582	14749	7.3	4D	-F		C	0458	20	.2		
940 HTPR	07	0510	0513	0520	N37	E10	.664	14749	8.0	10	-F		C	0513	10	.1		Y5
941 HTPR	07	0612	0614	0617	N37	E09	.662	14749	7.9	5	-F		C	0614	20	.2	E	Y5
942 HTPR	07	1337		1338D	N32	W05	.586	14749	7.2	1D	-F		C	1337	20	.2		Y5
943 MCMA	07	1654	1655	1712	N36	E04	.639	14749	8.0	18	-N		C	1655	70	.7	E	Y5
GRP63944	07	2320	2326+0	2340	N32	W08	.593	14749	7.4	20	-F				50	.6	F	
CULG	07	2320	2326	2340	N33	W08	.607	14749	7.4	20	-F		C	2326	40	.5		
MANI	07	2324E	2326	2340	N31	W08	.579	14749	7.4	16D	-F	2		2326	60	.7	F	
GRP63945	07	2348+2	2352+1	0001	N31	W09	.582	14749	7.3	13	-F				80	1.0	H	
MITK	07	2348	2353	0002	N32	W10	.599	14749	7.2	14	-N		C	2353	110	1.4	E	
MANI	07	2350	2352	2359	N31	W08	.579	14749	7.4	9	-F	2		2352	50	.6	FH	
946 VORO	08	0259	0304	0315	S25	E62	.893	14768	12.8	16	-N		C	0304	72		D	Y5
	09	0309	0313	NO FLARE PATROL														
947 MONT	09	0931E	0931	1003D	S24	E9D	1.000	14771	16.1	32D	-F		C	0931	20			Y5
GRP63948	09	1048E	1054	1104	S24	E42	.713	14768	12.6	16	-F				35	.5	DH	
MCMA	09	1048E		1110	S24	E42	.713	14768	12.6	22D	-N		P	1053	35	.5	DH	
ATHN	09	1053E	1054	1058	S25	E42	.717	14768	12.6	5D	-F		V		33	80.0		
949 MCMA	09	1105	1112	1140	N32	W26	.683	14749	7.5	35	-N		C	1112	20	.3	DH	Y5
	09	1200	1305	NO FLARE PATROL														
	09	1310	1525	NO FLARE PATROL														
	09	1530	1540	NO FLARE PATROL														
	09	1554	1610	NO FLARE PATROL														
	09	2059	2141	NO FLARE PATROL														
	09	2153	2230	NO FLARE PATROL														
950 HTPR	11	0807	0808	0811	S24	E12	.405	14768	12.2	4	-F		C	0808	10	.1		Y5
GRP63951	12	1006+2	1006	1021	S23	E53	.819	14771	16.4	15	-F							
HTPR	12	1006	1006	1010	S23	E56	.845	14771	16.6	4	-F		C	1006	10	.1		
KANZ	12	1008	1021	1032	S24	E51	.803	14771	16.2	24	-F		C					
952 HTPR	12	1212	1215	1229	S23	E55	.837	14771	16.6	17	-F		C	1215	50	.7	E	Y5
953 CATA	12	1525	1525	1540	S25	E48	.778	14771	16.2	15	-F	2		1525	56	.9		Y5
	12	1753	1800	NO FLARE PATROL														
	12	1919	1945	NO FLARE PATROL														
	12	1946	2015	NO FLARE PATROL														
	12	2026	2050	NO FLARE PATROL														
	12	2100	2144	NO FLARE PATROL														
	13	2121	2200	NO FLARE PATROL														
	14	1900	1909	NO FLARE PATROL														
	15	0935	1009	NO FLARE PATROL														
	15	1946	2008	NO FLARE PATROL														

Hα SOLAR FLARES

MAY 1977

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS	
	DATE 1977 MAY	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	McMATH PLAGE REGION	CMP. DAY	MIN.		CONF.	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.		
	15	2020	2028	NO FLARE PATROL														
	15	2032	2042	NO FLARE PATROL														
954 HCMA	16	1717	1721	1740	S18	W09	.305	14771	16.0	23	-F		C	1721	20	.2	EH	Y5
	16	2057	2205	NO FLARE PATROL														
	17	1818	1839	NO FLARE PATROL														
	17	1952	2011	NO FLARE PATROL														
	17	2015	2206	NO FLARE PATROL														
	17	2215	2235	NO FLARE PATROL														
955 KHAR	18	0920E	0927	0940D	S18	W29	.537	14771	16.2	20D	-F		C	0927	55	.7	D	Y5
	18	1200	1252	NO FLARE PATROL														
	18	1305	1453	NO FLARE PATROL														
	18	1601	1604	NO FLARE PATROL														
	18	1728	1740	NO FLARE PATROL														
	18	1945	2005	NO FLARE PATROL														
	18	2006	2013	NO FLARE PATROL														
	18	2019	2043	NO FLARE PATROL														
	18	2057	2113	NO FLARE PATROL														
	18	2133	2227	NO FLARE PATROL														
GRP63956	19	0015+4	0027+1	0100	S18	W39	.661	14771	16.1	45	-B				150	2.0	E	
CULG	19	0015	0028	0100	S18	W39	.661	14771	16.1	45	1N		C	0028	160	2.2		
MITK	19	0019	0027	0059	S19	W39	.665	14771	16.1	40	-B		C	0027	140	1.9	E	
	19	0253	0301	NO FLARE PATROL														
	19	0413	0414	NO FLARE PATROL														
	19	0445	0453	NO FLARE PATROL														
	19	0454	0500	NO FLARE PATROL														
	19	0503	0507	NO FLARE PATROL														
GRP63957	19	1415+4	1426	1434	S18	W48	.762	14771	16.0	19	-F				40	.6	D	
HCMA	19	1415		1434	S18	W48	.762	14771	16.0	19	-N		C	1427	25	.4	D	
HEUO	19	1419		1435	S18	W46	.740	14771	16.1	16	-F		C	1424	40	.6		
RAMY	19	1424E	1426U	1429	S18	W49	.772	14771	15.9	5D	-F	3	C		48			
958 HUAN	19	1925	1928	1942	S20	W54	.825	14771	15.8	17	-N	1	C	1928	50	.9	EH	Y5
	20	0251	0256	NO FLARE PATROL														
GRP63959	20	1029+5	1037+1	1043	S27	W11	.454	14780	19.6	14	-F						G	
KANZ	20	1029	1038	1041	S27	W12	.460	14780	19.5	12	-F		C					
HONT	20	1034	1037	1044	S27	W11	.454	14780	19.6	10	-F		C	1037	20		G	
	20	2058	2119	NO FLARE PATROL														
960 HUAN	21	1536		1606	N35	W60	.921	14781	17.2	30	-F	1	C	1545	25			Y5
	21	2100	2156	NO FLARE PATROL														
961 CULG	21	2358	2405	0012	N19	W18	.461	14776	20.6	14	-F		C	2405	20	.2		Y5
	22	0320	0330	NO FLARE PATROL														
962 HUAN	22	1603		1626	N35	W78	.988	14781	16.8	23	-F	1	C				T	Y5
963 HUAN	22	1753		1823	N35	W80	.992	14781	16.7	30	-F	1	C					Y5
964 HUAN	22	1923		2118	N21	W28	.584	14776	20.7	115	-N	1	C	1948	80	1.0	E	Y5
	22	2007	2012	NO FLARE PATROL														
	24	0940	0945	NO FLARE PATROL														
	24	0950	1000	NO FLARE PATROL														
	24	2004	2018	NO FLARE PATROL														
	25	2154	2251	NO FLARE PATROL														
	25	2256	2337	NO FLARE PATROL														
	25	2344	0005	NO FLARE PATROL														
	26	0117	0122	NO FLARE PATROL														
	26	0126	0129	NO FLARE PATROL														
	26	0133	0138	NO FLARE PATROL														
	26	0147	0150	NO FLARE PATROL														
	26	2123	2140	NO FLARE PATROL														
	26	2152	2218	NO FLARE PATROL														
	28	0030	0140	NO FLARE PATROL														

Hα SOLAR FLARES

MAY 1977

OBSERVATORY	OBSERVED UT				LOCATION					DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE 1977 MAY	START	MAX. PHASE	END	APPROX LAT.	APPROX LONG. FROM CMD	CENTRAL DISTANCE	McMATH PLAGE REGION	CMD DAY	MIN.		CONG	TYPE	TIME UT	MEAS. AREA Mill. of Disk	CORR AREA Sq. Deg.	
965 CATA	28	0615	0615	0620D	S21	E17	.436	14791	29.5	5D	-F	2		0615	28	.3	Y5
966 KANZ	28	1538	1538	1542	S21	E12	.391	14791	29.6	4	-F		C				Y5
GRP63967	29	1132	1210 1235	1239	N21	E88	1.000	14794	6.1	67	-N						
KANZ	29	1132	1210	1239	N21	E88	1.000	14794	5.1	67	-		C				
KANZ	29	1132	1235	1239	N21	E88	1.000	14794	5.1	67	-		C				
GRP63968	29	1648>9	1718	1723	N20	E81	.990	14794	5.8	35	-F						D
HUAN	29	1648		1723D	N20	E77	.979	14794	4.5	35D	-F	1	C	1657	20		DT
KANZ	29	1705	1718	1723	N21	E85	.997	14794	5.1	18	-N		P				
969 HUAN	29	1957	2000	2011D	N20	E76	.975	14794	4.5	14D	-N	1	C	2000	25		D Y5
970 PALE	29	2023	2026	2035	N20	E74	.968	14794	4.4	12	-F	3	C		25		F R Y5
	30	0054	0101	NO FLARE PATROL													
	30	0109	0124	NO FLARE PATROL													
	30	0134	0140	NO FLARE PATROL													
	30	0145	0152	NO FLARE PATROL													
	30	0303	0305	NO FLARE PATROL													
GRP63971	30	1039+2	1045+6	1104	N19	W23	.502	14785	28.7	25	-N				30	.4	
KANZ	30	1039	1050	1107	N20	W23	.511	14785	28.7	28	-B		C				E
CATA	30	1040	1045	1100D	N17	W24	.495	14785	28.6	20D	-B	2		1045	28	.3	
MONT	30	1040	1051	1104	N19	W23	.502	14785	28.7	24	-N		C	1051	80		E
MEUD	30	1041	1048	1100	N19	W24	.513	14785	28.6	19	-N		C	1048	30	.4	D
GRP63972	30	1222+1	1227	1245	N19	W25	.524	14785	28.6	23	-F				35	.4	E
MCMA	30	1222E		1230D	N18	W25	.516	14785	28.6	8D	-F		P	1228	30	.4	D
MEUD	30	1223	1227	1245	N19	W25	.524	14785	28.6	22	-F		C	1227	40	.5	E
WEND	30	1232E		1242	N20	W26	.544	14785	28.6	10D	-N						
HUAN	30	1237E		1252	N20	W25	.533	14785	28.7	15D	-F	1	P	1240	35	.4	ET
973 HUAN	30	1300		1306	N20	E66	.926	14794	4.5	6	-F	1	C				Y5
974 HUAN	30	1340		1344	N20	E66	.926	14794	4.5	4	-F	1	C				Y5
GRP63975	30	1412+1	1415+6 1427	1435	N20	W25	.533	14785	28.7	23	-F				30	.4	D
HUAN	30	1412	1416	1432	N19	W25	.524	14785	28.7	20	-N	2	C	1416	25	.3	D
MEUD	30	1413	1415	1435	N20	W25	.533	14785	28.7	22	-F		C	1415	30	.4	D
RAMY	30	1420E	1421U	1426D	N20	W26	.533	14785	28.7	6D	-F	3	C		32		FDE
MCMA	30	1426E		1440	N18	W26	.527	14785	28.7	14D	-N		P	1426	25	.3	D
HUAN	30	1426	1427	1432D	N22	W22	.521	14785	29.0	6D	-F	1	P	1427	30	.4	E
976 HUAN	30	1604		1610D	N20	E66	.926	14794	4.6	6D	-F	1	P				Y5
GRP63977	30	1607+2	1610	1622	N22	W23	.531	14785	28.9	15	-N				30	.4	DH
HUAN	30	1607		1628	N22	W22	.521	14785	29.0	21	-N	1	P	1624	30	.4	D
MCMA	30	1609		1622	N21	W23	.521	14785	28.9	13	-B		P	1609	25	.3	DH
MEUD	30	1609	1610	1613	N22	W23	.531	14785	28.9	4	-F		C	1610	30	.4	
GRP63978	30	1654>9	1657 1751	1816	N21	W25	.542	14785	28.8	82	-F						
MCMA	30	1654	1657	1830D	N19	W26	.536	14785	28.8	96D	-N		C	1657	50	.6	E
MEUD	30	1747	1751	1802	N23	W25	.561	14785	28.9	15	-F		C	1751	30	.4	D
979 MCMA	30	1853		1859D	N20	E62	.900	14794	4.4	6D	-F		C	1858	15	.2	D Y5
	30	1859	1935	NO FLARE PATROL													
980 CULG	31	0250	0256	0304	N21	W30	.595	14785	28.9	14	-N		C	0256	30	.4	Y5
GRP63981	31	1104	1111+4	1134	N22	W36	.667	14785	28.8	30	-N				50	.7	EH
MCMA	31	1104	1111	1128	N22	W34	.646	14785	28.9	24	-N		C	1111	50	.7	EH
CATA	31	1105E	1115	1140D	N21	W36	.661	14785	28.8	35D	-B	2		1115	56	.7	
HTPR	31	1116		1118D	N22	W37	.678	14785	28.7	2D	-N		C	1116	50	.7	
GRP63982	31	1125+3	1130+8	1145	N20	E53	.828	14794	5.5	20	-N				30	.5	D
CATA	31	1125	1130	1140D	N20	E52	.819	14794	4.4	15D	-N	2		1130	28	.5	
HTPR	31	1128		1140D	N20	E54	.837	14794	4.5	12D	-B		C	1130	40	.6	
MCMA	31	1128	1130	1145	N20	E54	.837	14794	4.5	17	-N		C	1130	25	.5	D
	31	1515	1519	NO FLARE PATROL													
	31	1801	1816	NO FLARE PATROL													

Hα SOLAR FLARES

MAY 1977

OBSERVATORY	OBSERVED UT				LOCATION				DURATION	IMPORTANCE	OBS.		MEASUREMENTS			REMARKS
	DATE 1977 MAY	START	MAX. PHASE	END	APPROX LAT.	APPROX MER. DIST.	CENTRAL DISTANCE	IN/NORTH PLAGE REGION	CMP. DAY			CONC	TYPE	TIME UT	MEAS. AREA Millionths of Disk	CORR. AREA Sq. Deg.	
	31	1902	1908	NO FLARE PATROL												
	31	1942	1953	NO FLARE PATROL												

"Remarks":

A = Eruptive prominence whose base is less than 90° from central meridian.
B = Probably the end of a more important flare.
C = Invisible 10 minutes before.
D = Brilliant point.
E = Two or more brilliant points.
F = Several eruptive centers.
G = No visible spots in the neighborhood.
H = Flare accompanied by a high speed dark filament.
I = Active region very extended.
J = Distinct variations of plage intensity before or after the flare.
K = Several intensity maxima.
L = Existing filaments show signs of sudden activity.
M = White-light flare.
N = Continuous spectrum shows effects of polarization.
O = Observations have been made in the calcium II lines H and K.
P = Flare shows helium D_3 in emission.
Q = Flare shows the Balmer continuum in emission.
R = Marked asymmetry in Hα line suggests ejection of high velocity material.
S = Brightness follows disappearance of filament (same position).
T = Region active all day.
U = Two bright branches, parallel (||) or converging (Y).
V = Occurrence of an explosive phase: important and abrupt expansion in about a minute with or without important intensity increase.
W = Great increase in area after time of maximum intensity.
X = Unusually wide Hα line.
Y = System of loop-type prominences.
Z = Major sunspot umbra covered by flare.

MAY 1977

DAILY FLARE INDICES
Includes all Flares

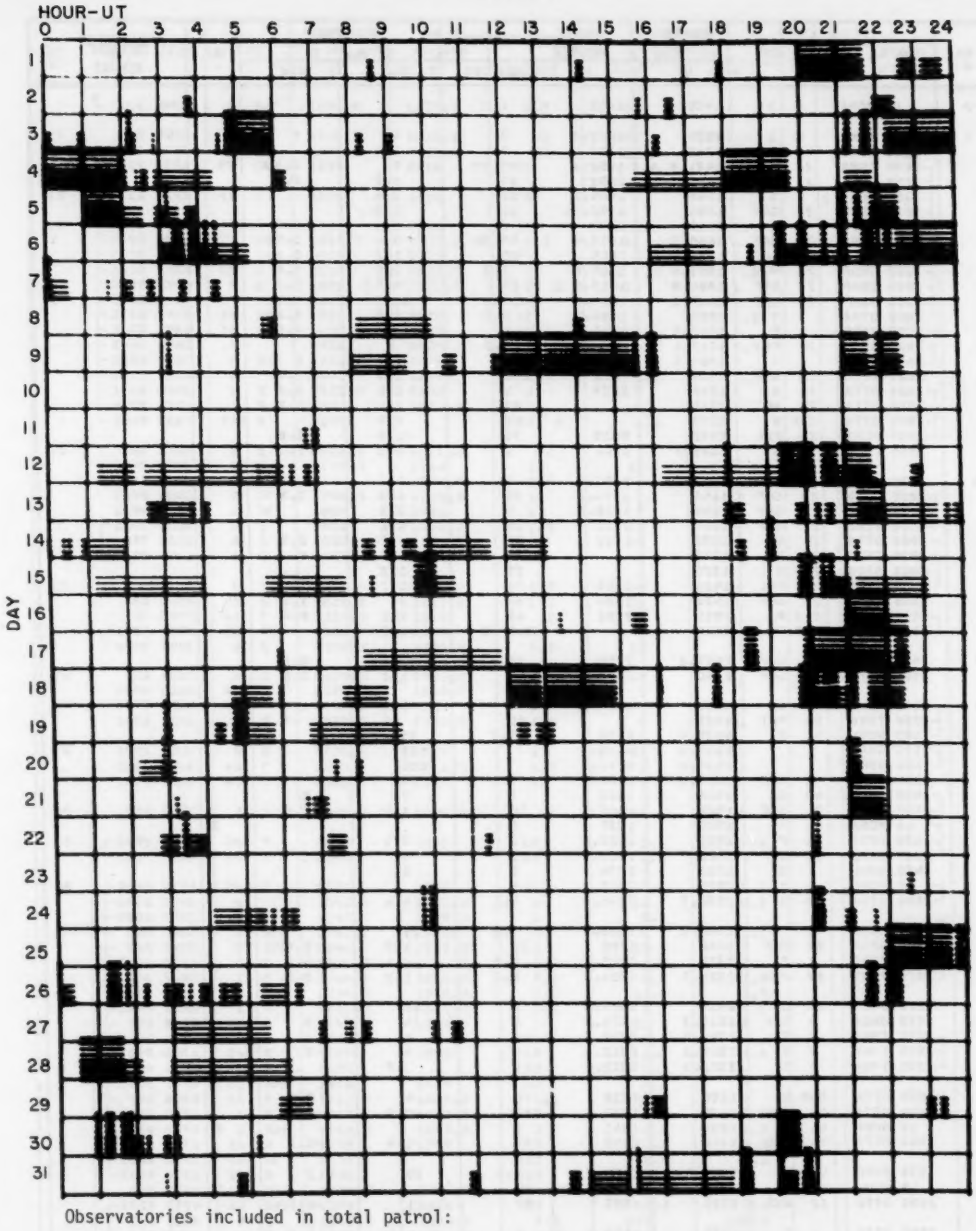
Date	Flare Index	HR. OBS.	Date	Flare Index	HR. OBS.	Date	Flare Index	HR. OBS.
770501	5.62	22.3	770511	5.28	24.0	770521	4.35	23.1
770502	0.00	24.0	770512	5.96	21.8	770522	5.07	23.5
770503	10.15	18.5	770513	0.00	23.4	770523	0.00	24.0
770504	18.68	22.4	770514	0.00	23.9	770524	0.00	23.5
770505	1.98	21.9	770515	0.00	22.8	770525	0.00	22.0
770506	22.38	20.2	770516	5.45	22.9	770526	0.00	23.3
770507	22.65	24.0	770517	0.00	21.2	770527	0.00	24.0
770508	.84	24.0	770518	3.79	19.1	770528	11.05	22.8
770509	3.75	18.9	770519	14.62	23.6	770529	3.38	24.0
770510	0.00	24.0	770520	3.39	23.6	770530	8.83	22.8
						770531	5.18	23.4

When no Flare Index is given, it is 0 for that day.

INTERVALS OF NO FLARE PATROL OBSERVATION

FOR PRECEDING SOLAR FLARE TABLE

MAY 1977



Observatories included in total patrol:

Athenes	Herstmonceux	Kiev	McMath-Hulbert	Ramey
Bucharest	Huancayo	Kodaikanal	Meudon	Tashkent
Catania	Istanboul	Locarno	Mitaka	Tehran
Culgoora	Kanzelhohe	Lvov	Monte Mario	Upice
Haute Provence	Kharkov	Manila	Palehua	Voroshilov
				Wendelstein

Times of no flare patrol are shown by the shaded area for each day divided into times of no cinematographic patrol (bottom half of day) and times of neither visual nor cinematographic patrol (top half of day).

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

MAY 1977

MAY 1977	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
2	18	MCMA	6 S	1450	1452	2			1	
3	3750	TYKW	5 S	0524	0525.3	3	4	1		OR
	2800	OTTA	40 F	1342	1343	2	2.8			
	2695	SGMR	20 GRF	1431.9	1452.9	83.1U	7	2.1U		1
	2800	OTTA	21 GRF	1445	1450	65	1.2	0.7		
	3000	BERL	1 S	1445	1449.3	10	3.6			
	9500	BERL	20 GRF	1445	1452.3D	12	6.9			
	2800	OTTA	1 S	1448	1449	2	1.4	0.7		
	8800	SGMR	20 GRF	1449.1	1459.4	65.9U	6.4	1.9U		1
	2800	OTTA	21 GRF	1750	1815	45	1.2	0.6		
	7000	SAOP	28 PRE	1803.8	1805.6	3.9	2.2	1.9		
	2695	SGMR	20 GRF	1804.9	1812.5	25.1	5.5	1.7		SWF 2
	8800	SGMR	20 GRF	1805.1	1818.7	24.9	30.8	9.2		SWF 2
	2800	OTTA	1 S	1805	1806.2	2.5	1.2	0.6		
	7000	SAOP	4 F	1807.6	1811.4	8	9.8	5.5		
	7000	SAOP	29 PBI	1813.6		35.2				
	2800	OTTA	1 S	1809.5	1812	5	1.8	1		
	2800	OTTA	28 GRF	1930	2100	160	2.6	1.4		
	2800	OTTA	24 R	2218	2223	5	1.6	0.8		
	2800	OTTA	27 RF	2218		80	1.6	1.2		
	2800	OTTA	24P R	2223		42	1.6			
	2695	PENT	26 FAL	2305	2336	33	-1.6	-0.8		
	2695	PENT	1 S	2345.5	2346	1	3.2	1.2		
4	1000	TYKW	45 C	0321	0322.6	4	1.3	.5		
	2800	OTTA	20 GRF	1110	1116.2	35	1.8	0.8		
	3000	BERL	20 GRF	1115	1116.8	9	3.1			
	9500	BERL	20 GRF	1115	1130	39	4.6			
	2800	OTTA	24 R	1233	1305	32	1.2	0.9		
	2800	OTTA	27 RF	1233		137	1.2	1		
	2800	OTTA	24P R	1305		75	1.2			
	2800	OTTA	26 FAL	1420	1450	30	-1.2	-0.6		
	2800	OTTA	22 GRF	1530	1635	195	3	1.5		
	2800	OTTA	240 R	2015	2100	45	1.2	0.6		
	2800	OTTA	24P R	2100		240 D	1.2			
5	2800	OTTA	28 GRF	2057.8	2059	30	0.8	0.4		
	2800	OTTA	28 GRF	2150	2205	40	1.2	0.6		
6	2000	TYKW	5 S	0633	0634.8	4	3.1	1.3		OL
	2000	TYKW	29 PBI	0637		15	.6	.3		
	100	GORK	41 F	0637.6	0638	3.7	35			
	100	GORK		0637.6	0639.4		120			
	100	GORK		0637.6	0640.5		120			
	408	TRST	42 SER	1024.6	1024.6	4.3	20			
	1420	BOUL	45 C	1518	1522	7	2	1		
	2800	OTTA	21 GRF	1520	1523	12	1.2	0.6		
	18	MCMA	41 F	1520	1527	7			3	
	2800	OTTA	40 F	1521	1522.5	2	2.2			
	2695	BOUL	23 GRF	1522	1523.5	1	4	1		
	1420	BOUL	1 S	1733	1734	2	1			
	18	MCMA	6 S	2035	2040	6			3	
	2800	OTTA	8 S	2036.3	2036.3	0.1	4.4			
7	260	ONDR	8 S	1336.8	1336.8	.3	25			
	2800	OTTA	28 GRF	1650	1700	30	1.2	0.6		
	2695	PENT	1 S	2322	2322.3	2.5	8.4	4.2		
	2695	PENT	29 PBI	2324.5	2324.5	4.5	1.2	0.6		
8	260	ONDR	45 C	0914	0915.8	3	10			
	260	ONDR	4 S/F	1021.3	1021.8	2	14	3		
	3750	TYKW	5 S	2321.5	2322.3	6	4	1		
	2000	TYKW	5 S	2321.8	2322.3	6	8	2		OL
	1000	TYKW	5 S	2321.8	2322.3	2	.7	.2		
9	2800	OTTA	240 R	1100	1210	70	4	2		
	2800	OTTA	26 FAL	1655	1705	10	-0.8	-0.4		
	18	MCMA	41 F	1834	1841	8			1	
	2800	OTTA	26 FAL	1910	2000	50	-1.4	-0.7		
11	930	BORD	46 C	1428.4	1428.7	.6	25	2		
	18	MCMA	41 F	1708	1714	13			3	
	2800	OTTA	32 ABS	1625	1905	95	-1	-0.5		
12	2800	OTTA	1 S	1522	1522.5	2	1.6	0.8		
13	2695	BOUL	1 S	1758	1759.5	4	3	1		
14	2800	OTTA	28 GRF	1310	1330	50	1	0.5		
15	2695	PENT	240 R	2235	2250	15	1.2	0.8		
	2695	PENT	24P R	2250		160 D	1.2			
16	536	ONDR	2 S/F	1234.2	1235	2	10			

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

MAY 1977

MAY 1977	FREQUENCY	STATION	TYPE	STARTING TIME UT	TIME OF MAXIMUM UT	DURATION MINUTES	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1} PEAK	FLUX DENSITY MEAN	INT	POLARIZATION OR REMARKS
	260	ONDR	2 S/F	1234.6	1235.3	1.5	15			
17	260	ONDR	8 S	0838.5	0838.5	.3	33			
	408	TRST	6 S	1020.2	1020.4	.3	13	4		
	2800	OTTA	20 GRF	2204	2210	80	1.6	0.8		
18	18	MCMA	41 F	1808	1810	5			1	
19	2695	PENT	240AR	0013	0040	27	1.6	0.8		
	2695	BOUL	23 GRF	0815.5	0019.5	4.3	12	4		
	2695	PENT	21 GRF	0019	0021	21	2	1		
	1000	TYKW	45 C	0019	0023.9	9	1.9	.9		
	2000	TYKW	5 S	0020 E	0023.9	8 D	11	4 D		OR
	2000	TYKW	29 PBI	0028		50	2	1		
	3750	TYKW	21 GRF	0020	0030	50	4	1.5		
	9400	TYKW	20 GRF	0020	0030	50	6	2		OL
	2695	MANI	3	0021	0024	8.5	14.2	5.5		1
	2695	PENT	2 S/F	0022.2	0024	6	8.8	3		
	1415	MANI	3	0022.4	0024	8.6	4.4	1.8		1
	1420	BOUL	1 S	0022.5	0023	1	2	1		
	3750	TYKW	5 S	0022	0024.8	6	6	2		
	2695	PENT	24P R	0040		65 D	1.6			
20	700	SYDN	8 S	0422.2	0422.3	.2				
	4995	BOUL	3 S	1747.5	1748	2	11	4		
	2695	BOUL	2 SF	1748	1748.5	2.5	9	3		
	2695	BOUL	2 SF	1751.5	1753.5	2	7	2		
	2695	BOUL	2 SF	1804	1805	1	7	9		
	2695	BOUL	8 S	1830	1830.5	1.5	19	6		
	4995	BOUL	8 S	1830	1834.5	4	24	8		
	2695	BOUL	1 S	1833.5	1834	2	3	1		
22	260	ONDR	4 S/F	0953.4	0954.6	1.5	47	16		
	260	ONDR	8 S	1014.2	1014.2	.3	20			
	237	TRST	41 F	1814.9	1815	.1	64			11L
	2800	OTTA	20 GRF	1930	2000	70	1.2	0.6		
	4995	BOUL	3 S	1951.5	1954.5	6.5	15	5		
23	930	BORD	8 S	0959.8	0959.8	.1	15	1		
	2695	BOUL	45 C	2046.5	2049.5	4	5	2		
	2695	BOUL	40 F	2107.5	2111	5	4	1		
	1420	BOUL	1 S	2352.5	2353.5	1.5	2	1		
24	4995	BOUL	8 S	0056.5	0057	1	38	13		
	2695	BOUL	40 F	1858	1901.5	6.5	6	2		
	1420	BOUL	45 C	2101	2105	2	1			
25	930	BORD	3 S	1449.5	1449.6	.7	44	6		
29	2695	PENT	240 R	2200	2255	55	1.8	0.9		
	2695	PENT	24P R	2255		160 D	1.8			
30	2800	OTTA	240AR	1038	1050	12	2.4	1.2		
	1470	BERL	4	1043.5	1045.8	6	13	4.3		
	3000	BERL	3 S	1043.5	1045.4	3	8.5			
	536	ONDR	2 S/F	1043.7	1045.7	4	6	2.8		
	808	ONDR	2 S/F	1044.4	1045.2	2	15	7		
	2800	OTTA	1 S	1044.5	1046.5	5.5	8.4	2		
	606	SGMR	1 S	1044.6	1046.3	5.4	8.1	2.4		1
	1415	SGMR	3 S	1044.8	1046.3	3.5	13.1	3.9		1
	2695	SGMR	1 S	1045.2	1046.5	3.5	8	2.4		1
	930	BORD	46 C	1045	1045.8	3	22	8		
	2800	OTTA	24P R	1050		100	2.4			
	2800	OTTA	240 R	1225	1235	10	1.2	0.6		
	2800	OTTA	24P R	1235		85	1.2			
	2800	OTTA	21 GRF	1410	1425	60	2	1		
	930	BORD	41 F	1411.7	1411.8	1.1	10	2		
	2800	OTTA	1 S	1412	1413.5	3	1.4	0.7		
	2800	OTTA	2 S/F	1608.5	1608.8	2	1.6	1.2		
	2800	OTTA	24 R	1735	1755	20	2.4	1.2		
	2800	OTTA	27A RF	1735		230	2.4	2.2		
	2800	OTTA	24P R	1755		185	2.4			
	245	SGMR	43 NS	1759.2	2209.8	368.8D	73			2
	2800	OTTA	20 GRF	1900	1920	35	0.8	0.4		
	245	SGMR	7 C	1925.5	1928.6	5.1	335	100.5		3
	410	SGMR	6 S	1927.3	1927.9	3.3	168	50.5		3
	2800	OTTA	26 FAL	2100	2125	25	-1.4	-0.7		
	2800	OTTA	20 GRF	2139	2147	70	1.8	0.9		
31	260	ONDR	44 NS	0642		506	78	7		
	245	SGMR	44 NS	0913 E	1425.4	896 D	134			1
	2800	OTTA	24 R	1100	1105	5	1.4	0.7		
	2800	OTTA	27 RF	1100		205	1.4	1.2		
	2800	OTTA	24P R	1105	1340	155	1.4			
	2800	OTTA	26 FAL	1340	1425	45	-1.4	-0.7		

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

MAY 1977

MAY 1977	FREQUENCY	STATION	TYPE	STARTING TIME	TIME OF MAXIMUM	DURATION	FLUX DENSITY 10^{-22} Wm^{-2} Hz^{-1}		INT	POLARIZATION OR REMARKS
				UT	UT	MINUTES	PEAK	MEAN		
31	930	BORD	41 F	1511.7	1511.7	.5	15	2		
	2600	OTTA	20 GRF	1640	1655	50	1	0.5		
	2600	OTTA	32 ABS	1830	1900	130	-1.4	-0.7		

Reports received from the following observatories:

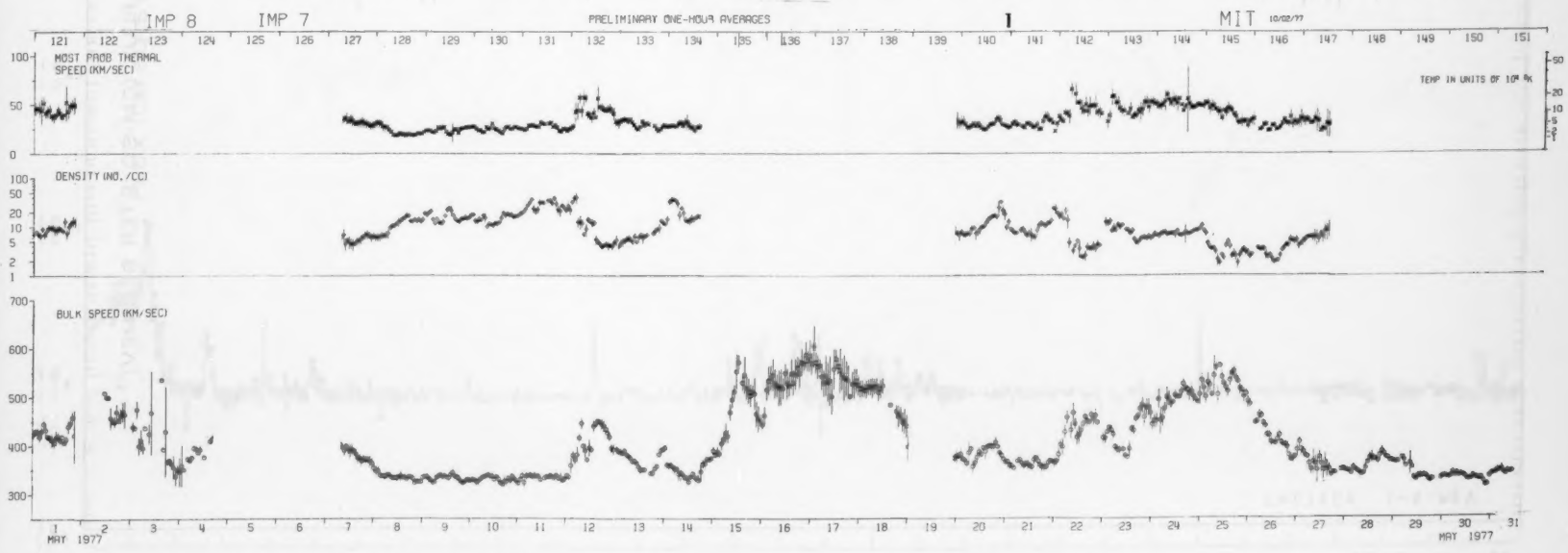
ARCE = Arcetri
BERL = Berlin-Adlershof
BORD = Bordeaux
BOUL = Boulder
CRIM = Simferopol
DWIN = Dwingeloo
GORK = Gorky
HARS = Harestua
HIRA = Hiraiso
HUAN = Huancayo
IRKU = Irkutsk
KIEV = Kiev
MANI = Manila
MCMA = McMath-Hulbert
ONDR = Ondrejov
OTTA = Ottawa
PENT = Penticton
POTS = Potsdam
SAOP = Sao Paulo
SGMR = Sagamore Hill
SYDN = Sydney
TORN = Torun
TYKW = Toyokawa
TRST = Trieste
VORO = Voroshilov (Ussurisk)

Explanation of Type Code:

1 Simple 1
2 Simple 1F
3 Simple 2
4 Simple 2F
5 Simple
6 Minor
7 Minor +
8 Spike
20 Simple 3
21 Simple 3A
22 Simple 3F
23 Simple 3AF
24 Rise
25 Rise A
26 Fall
27 Rise and Fall
28 Precursor
29 Post Burst Increase
30 Post Burst Increase A
31 Post Burst Decrease
32 Absorption
40 Fluctuation
41 Group of Bursts
42 Series of Bursts
43 Onset of Noise Storm
44 Noise Storm in Progress
45 Complex
46 Complex F
47 Great Burst
48 Major
49 Major +

IMP 7 AND 8 SOLAR WIND PLASMA

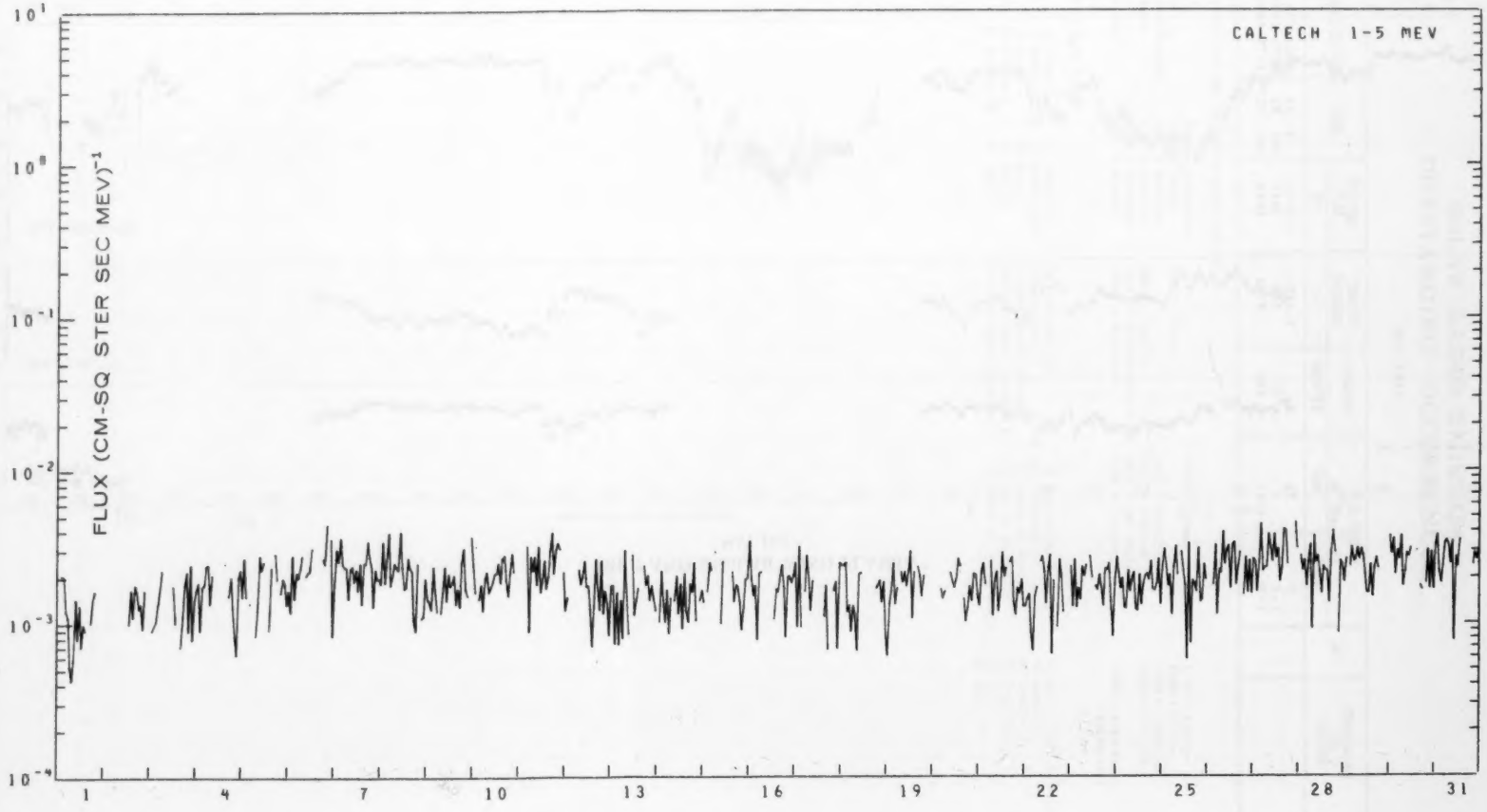
MAY 1977



17 May 77

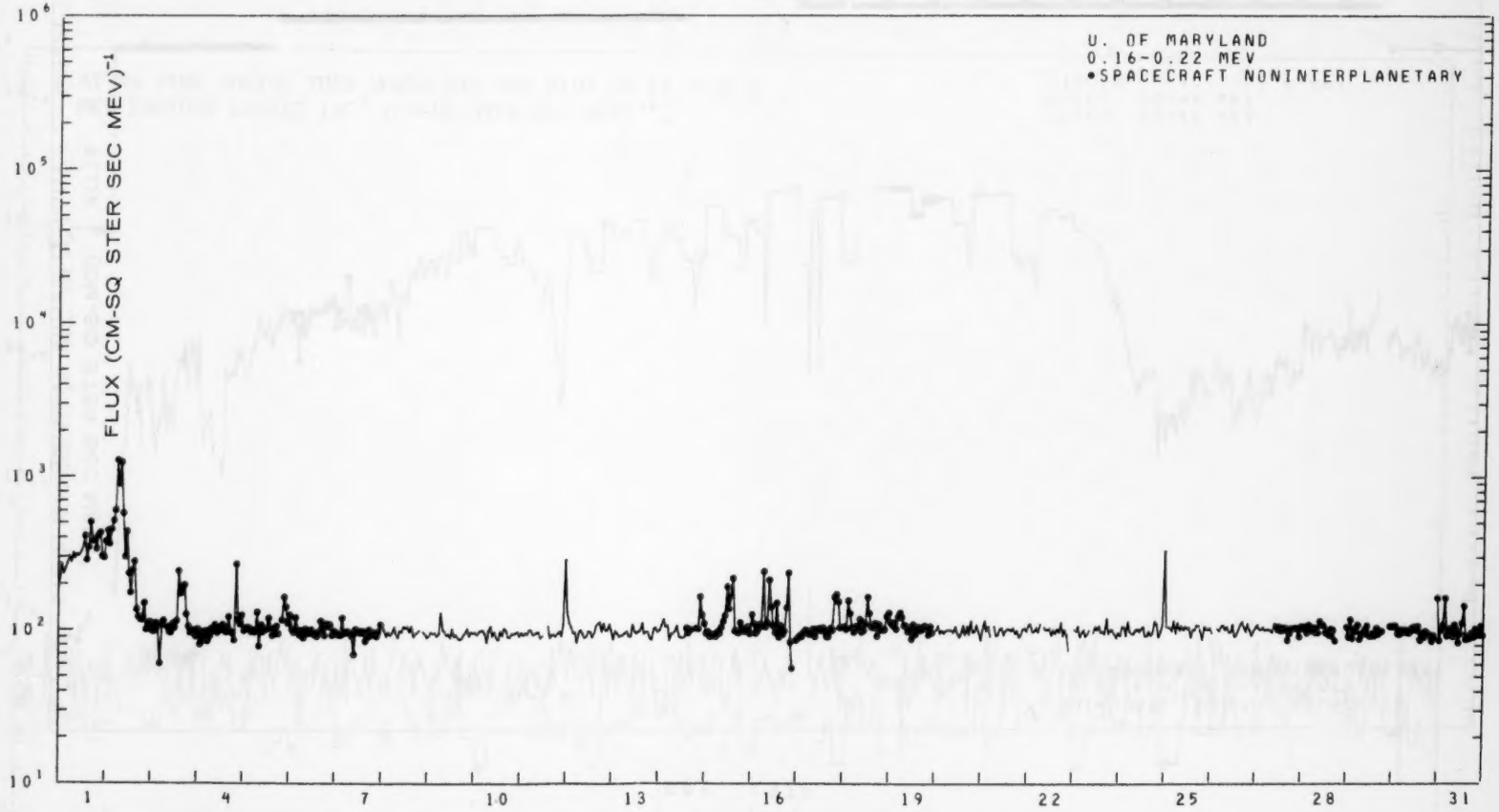
IMP 7 AND 8 ELECTRONS

MAY, 1977



IMP 7 AND 8 LOW ENERGY PROTONS

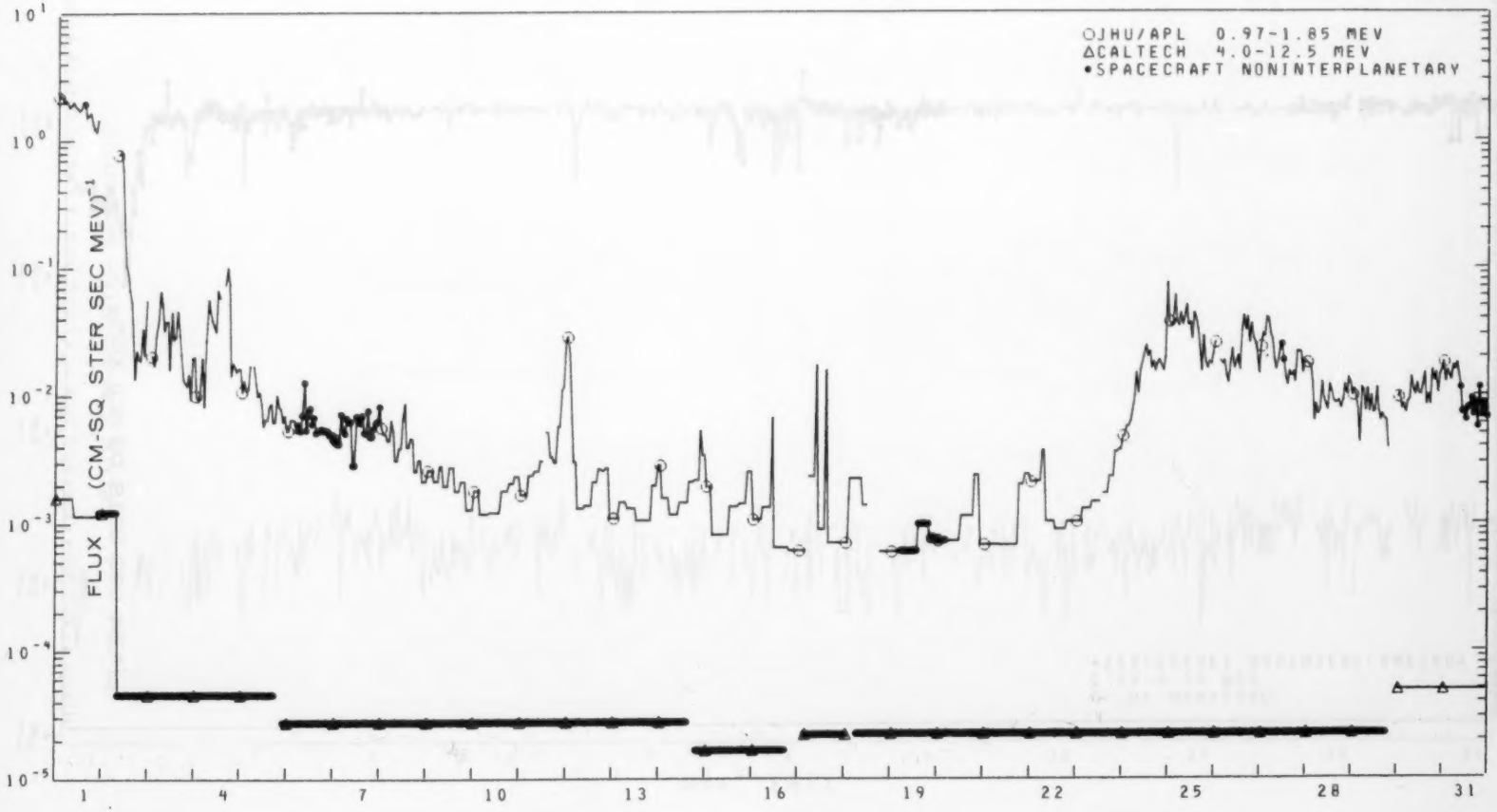
MAY, 1977



19 May 77

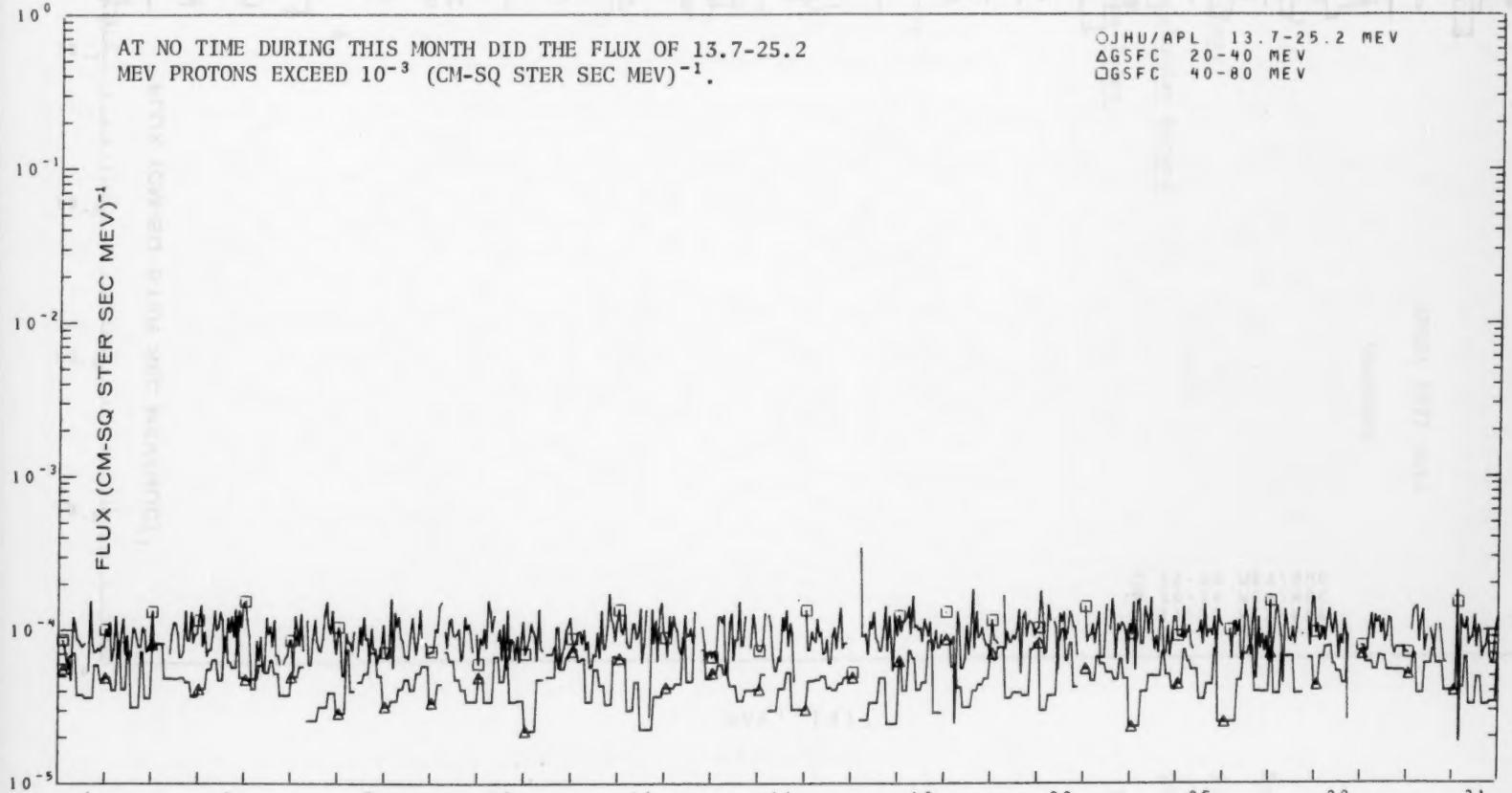
IMP 7 AND 8 INTERMEDIATE ENERGY PROTONS

MAY, 1977



IMP 7 AND 8 HIGH ENERGY PROTONS

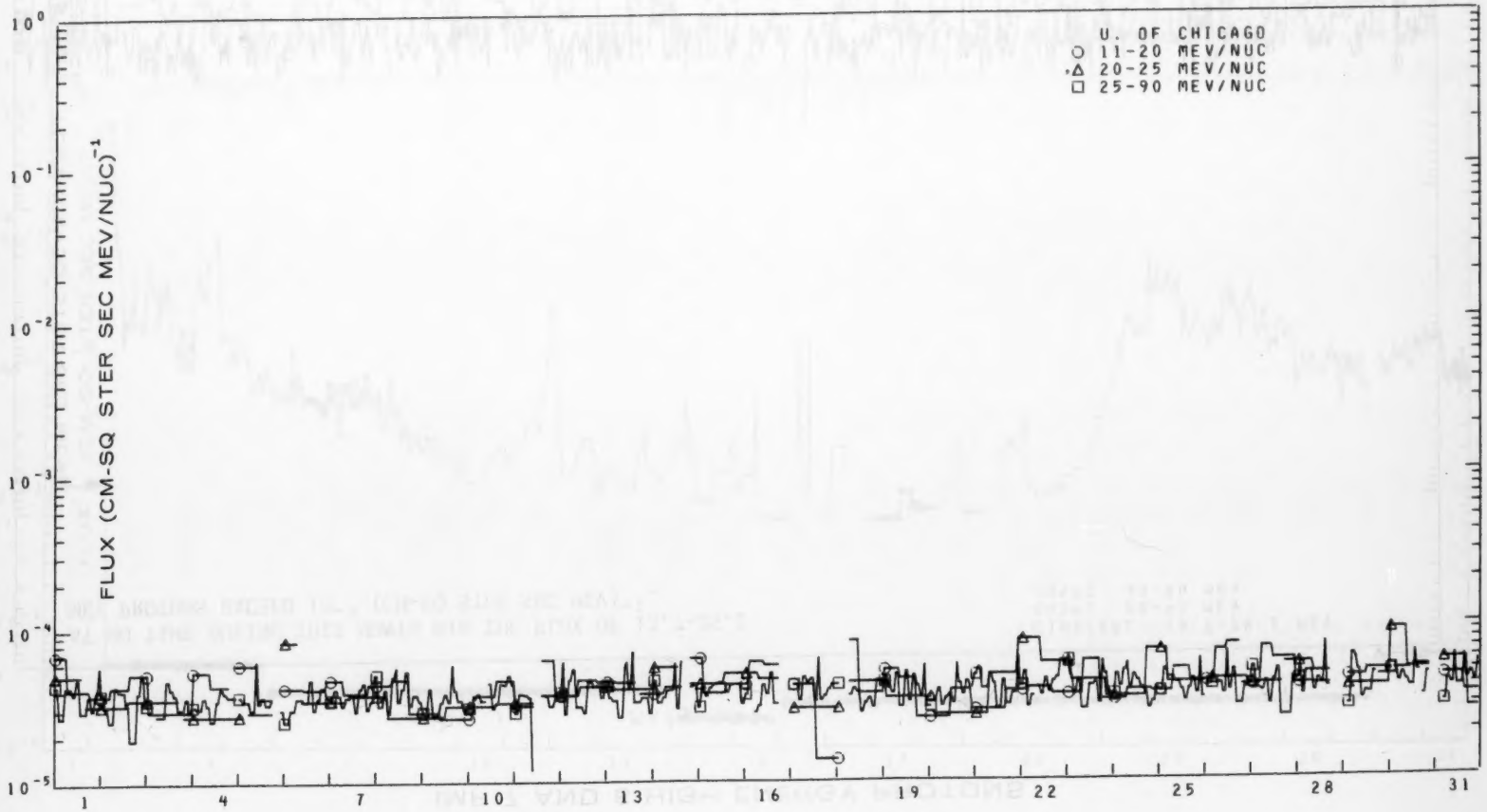
MAY, 1977



21
May 77

IMP 7 AND 8 ALPHA PARTICLES

MAY, 1977



APRIL 1977 DATA

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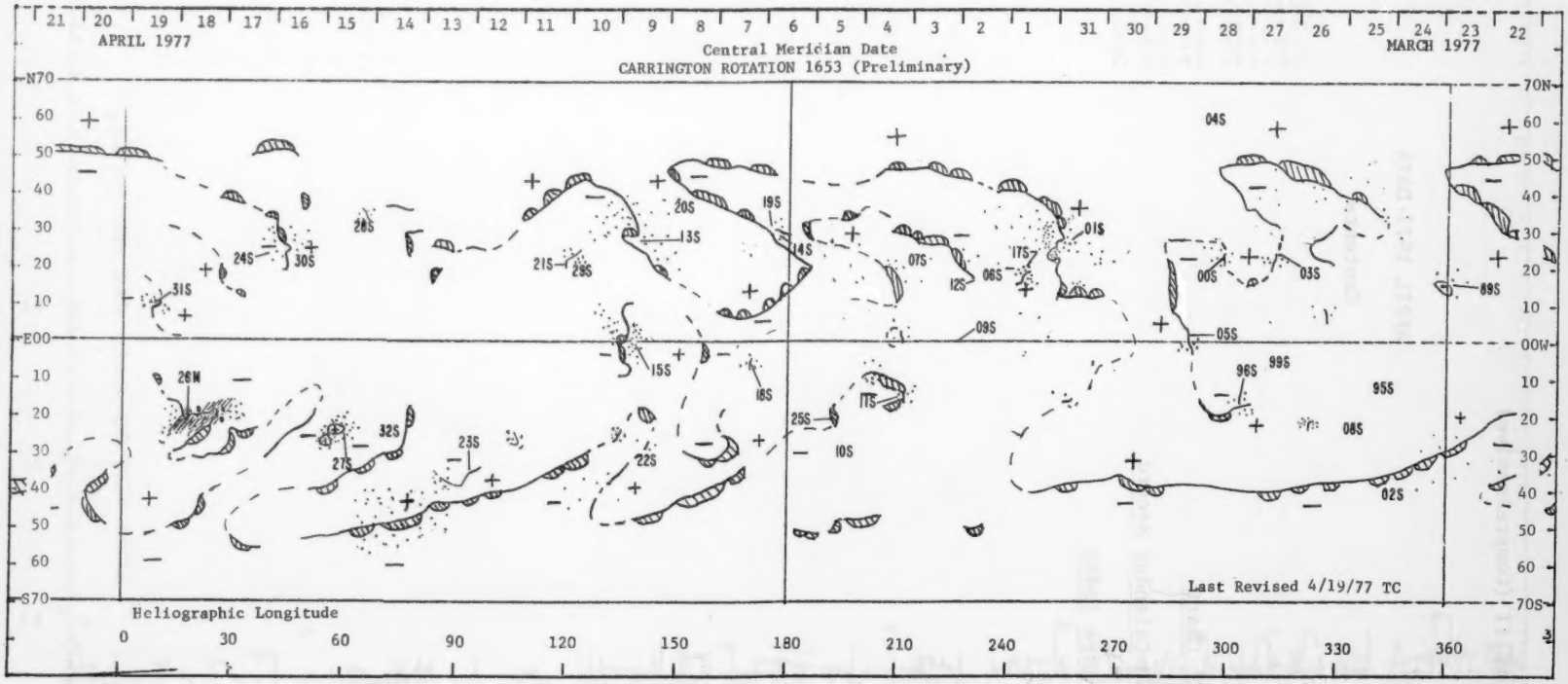
Hα Synoptic Chart	24-25
Abbreviated Calendar Record	26-33
Regional Flare Index	33

ABBREVIATED CALENDAR RECORD

Hα SYNOPTIC CHART

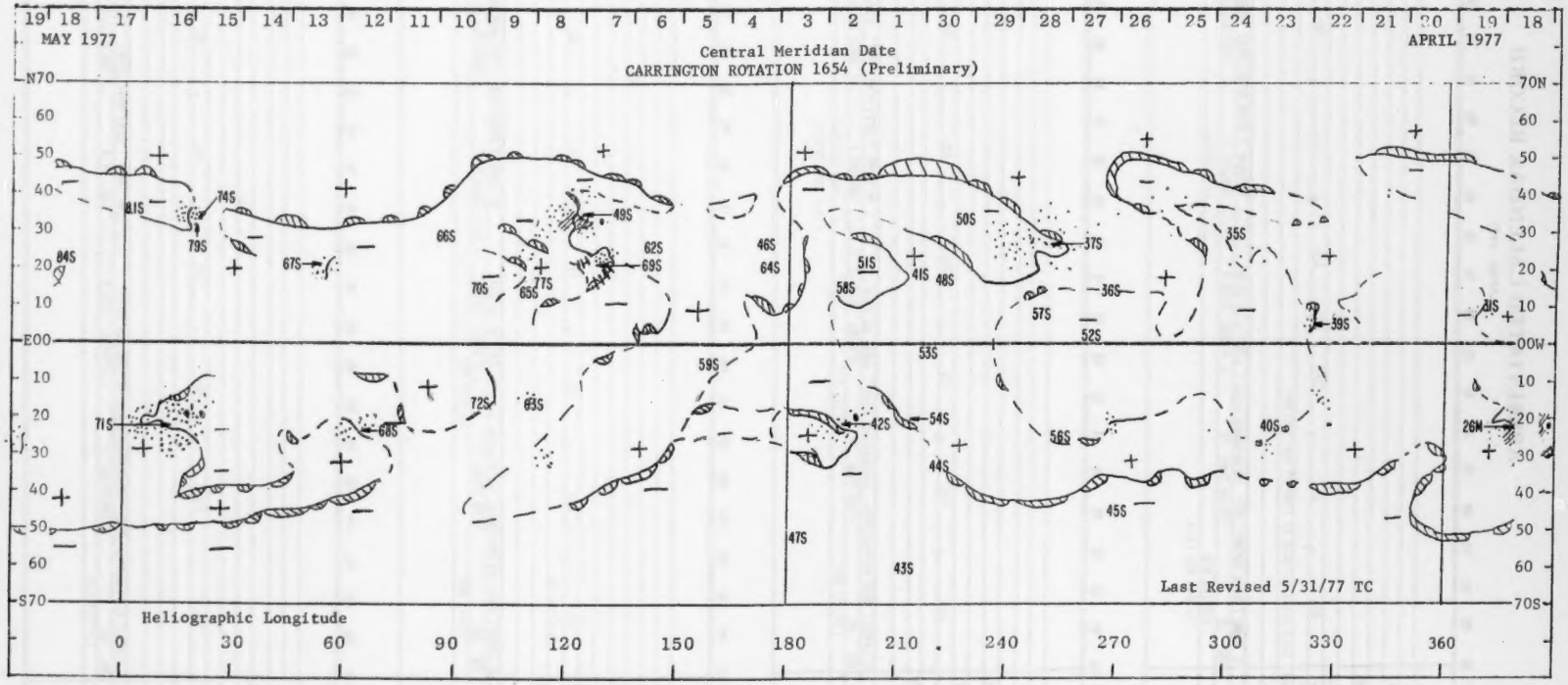
MARCH - APRIL 1977



ABBREVIATED CALENDAR RECORD

Hα SYNOPTIC CHART

APRIL 1977 - MAY 1977



25 Apr 77

ABBREVIATED CALENDAR RECORD

APRIL 1977

Apr. 1, 1977

		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
FLARES																										
Bursts	cm																									
	dm																									
	m																									
	Dkm																									
SID																										
X-Rays																										
Ap 4 03	Kp	0+				1+			2+			1-			1-			1o			1o			0+		
	sc																									
Aurora	USSR	Data not available at time of publication																								
	W.E.																									
Cosmic Rays																										

Green Corona: E. Limb 7 days earlier: NE- no data; SE- no data; W. Limb 7 days later: NW- moderately bright; SW-

Indices: Rz: 7; 10cm flux: 75; Flare: 0/20.4; Ca: 5.7; Ip: 0; Ia: 2

Solar Regions: (14717) N20

Sunspots: (19769) N18 (8)4

Apr. 2, 1977

		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
FLARES																										
Bursts	cm																									
	dm																									
	m																									
	Dkm																									
SID																										
X-Rays																										
Ap 5 05	Kp	1-				1+			1+			2o			0+			1o			0+			3-		
	sc																							▲ 2157(13)		
Aurora	USSR																									
	W.E.																									
Cosmic Rays																										

Green Corona: E. Limb 7 days earlier: NE- no data; SE no data; W. Limb 7 days later: NW- moderately bright; SW-

Indices: Rz: 11; 10cm flux: 76; Flare: 0/24.0; Ca: 5.3; Ip: 0; Ia: 0

Solar Regions: (14706) N18; (14712) N17

Sunspots

Apr. 3, 1977

		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
FLARES																										
Bursts	cm																									
	dm																									
	m																									
	Dkm																									
SID																										
X-Rays																										
Ap 12	Kp	4o				3-			3-			2+			1+			1+			2o			3o		
	sc																									
Aurora	USSR																									
	W.E.																									
Cosmic Rays																										

Green Corona: E. Limb 7 days earlier: NE- no data; SE- no data; W. Limb 7 days later: NW- moderately bright; SW-

Indices: Rz: 10; 10cm flux: 77; Flare: 2/21.8; Ca: 5.4; Ip: 0; Ia: 2

Solar Regions: (14709) N00; (14707) N22

Sunspots

Apr. 4, 1977

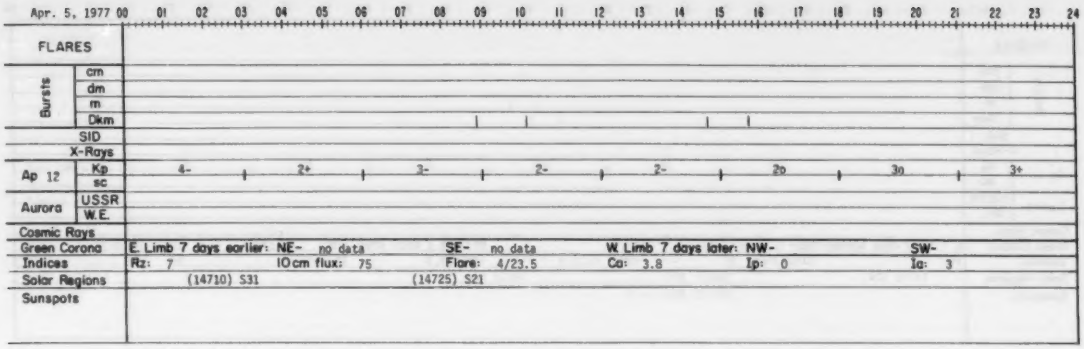
		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
FLARES																										
Bursts	cm																									
	dm																									
	m																									
	Dkm																									
SID																										
X-Rays																										
Ap 24	Kp	5+				4+			4+			2+			3+			3-			3+			3+		
	sc																									
Aurora	USSR																									
	W.E.																									
Cosmic Rays																										

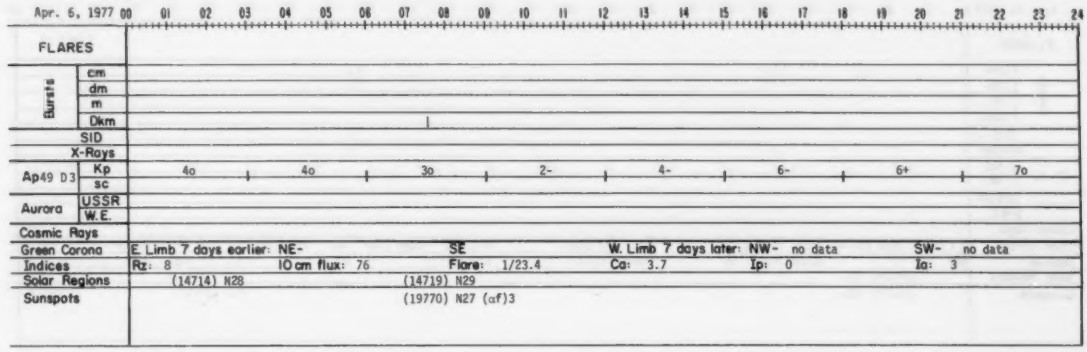
Green Corona: E. Limb 7 days earlier: NE- no data; SE no data; W. Limb 7 days later: NW-; SW-

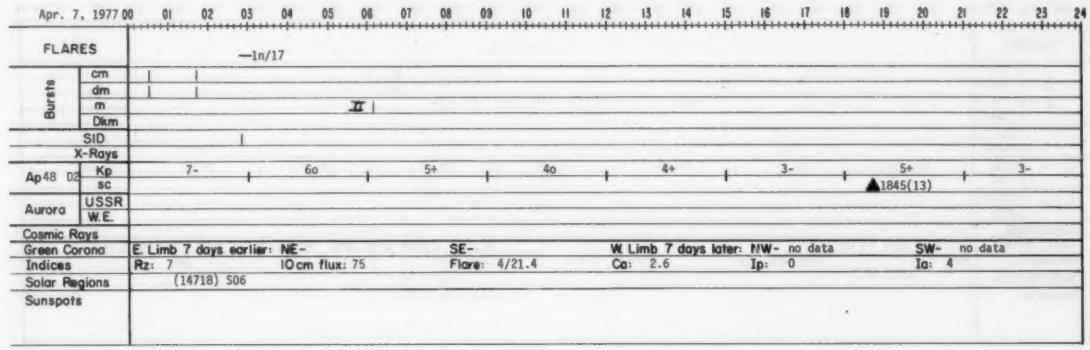
Indices: Rz: 7; 10cm flux: 77; Flare: 0/24.0; Ca: 4.8; Ip: 0; Ia: 5

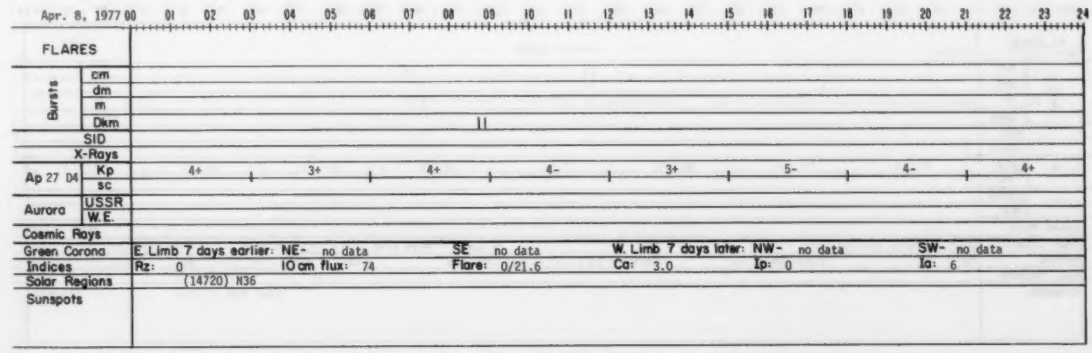
Solar Regions: (14711) S15

Sunspots


Apr. 5, 1977
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap 12
Kp
sc
4- 2+ 3- 2- 2- 2o 3o 3+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE- no data W. Limb 7 days later: NW- SW-
Indices
Rz: 7 10cm flux: 75 Flare: 4/23.5 Ca: 3.8 Ip: 0 Ia: 3
Solar Regions
(14710) S31 (14725) S21
Sunspots


Apr. 6, 1977
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap49 D3
Kp
sc
4o 4o 3o 2- 4- 6- 6+ 7o
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- SE W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 8 10cm flux: 76 Flare: 1/23.4 Ca: 3.7 Ip: 0 Ia: 3
Solar Regions
(14714) N28 (14719) N29
Sunspots
(19770) N27 (αf)3


Apr. 7, 1977
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1n/17
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap48 D2
Kp
sc
7- 6o 5+ 4o 4+ 3- 5+ 3-
1845(13)
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- SE- W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 7 10cm flux: 75 Flare: 4/21.4 Ca: 2.6 Ip: 0 Ia: 4
Solar Regions
(14718) S06
Sunspots


Apr. 8, 1977
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap 27 D4
Kp
sc
4+ 3+ 4+ 4- 3+ 5- 4- 4+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 0 10cm flux: 74 Flare: 0/21.6 Ca: 3.0 Ip: 0 Ia: 6
Solar Regions
(14720) N36
Sunspots

Apr. 9, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 22 — Kp: 4+ | 4o | 4o | 3o | 4- | 4- | 3- | 3o

sc

Aurora — USSR, W.E.

Cosmic Rays

Green Corona — E. Limb 7 days earlier: NE- moderately bright SE- W. Limb 7 days later: NW- no data SW- no data

Indices — Rz: 0 10cm flux: 75 Flare: 0/22.9 Ca: 3.3 Ip: 0 Ia: 7

Solar Regions — 14722 S34 14713 N27 14715 S01

Sunspots — (19772) N26 (af)3

Apr. 10, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 13 — Kp: 3o | 4- | 3- | 1+ | 2+ | 4- | 3o | 2o

sc

Aurora — USSR, W.E.

Cosmic Rays

Green Corona — E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- no data SW- no data

Indices — Rz: 0 10cm flux: 76 Flare: 0/23.0 Ca: 1.9 Ip: 0 Ia: 4

Solar Regions — (14729) N20

Sunspots — (19774) N20

Apr. 11, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 14 — Kp: 3+ | 3+ | 2o | 1+ | 3o | 2+ | 3+ | 4-

sc

Aurora — USSR, W.E.

Cosmic Rays

Green Corona — E. Limb 7 days earlier: NE- SE- W. Limb 7 days later: NW- no data SW- no data

Indices — Rz: 8 10cm flux: 79 Flare: 2/23.9 Ca: 1.9 Ip: 0 Ia: 5

Solar Regions — 14721 N22

Sunspots

Apr. 12, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES — 1b/26

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 8 — Kp: 3o | 1+ | 0o | 1+ | 2o | 2- | 2o | 4-

sc

Aurora — USSR, W.E.

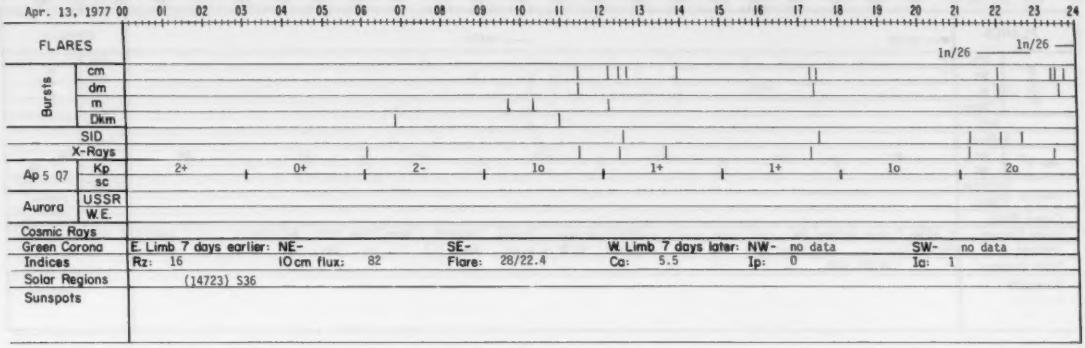
Cosmic Rays

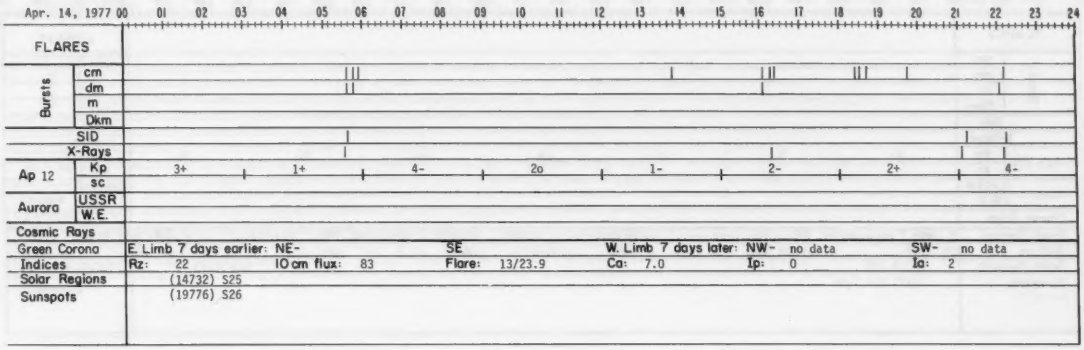
Green Corona — E. Limb 7 days earlier: NE- SE W. Limb 7 days later: NW- no data SW- no data

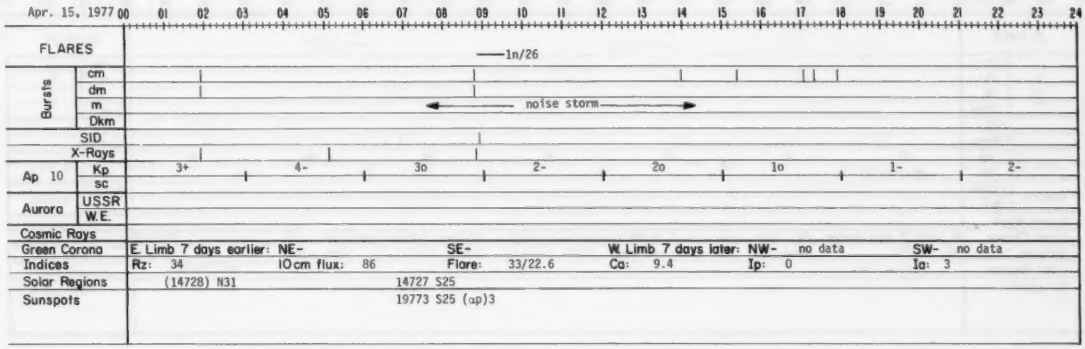
Indices — Rz: 12 10cm flux: 80 Flare: 14/22.3 Ca: 4.6 Ip: 0 Ia: 2

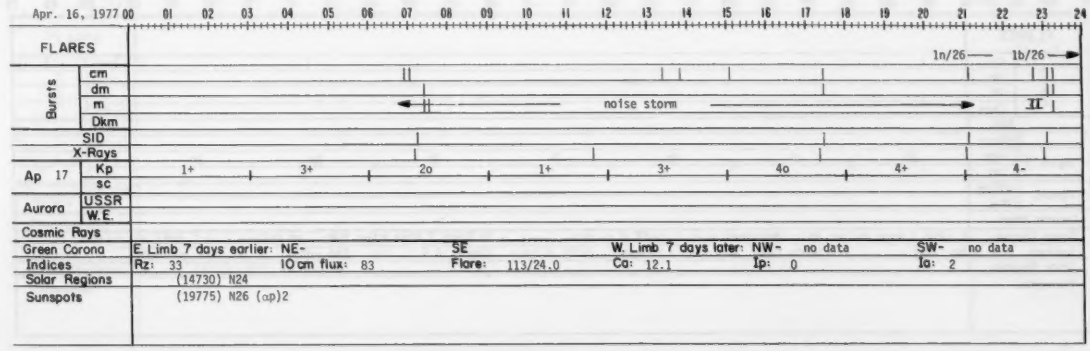
Solar Regions

Sunspots


Apr. 13, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1n/26
1n/26
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap 5 Q7
Kp
2+ 0+ 2- 1o 1+ 1+ 1o 2o
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- SE- W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 16 10cm flux: 82 Flare: 28/22.4 Ca: 5.5 Ip: 0 Ia: 1
Solar Regions
(14723) S36
Sunspots


Apr. 14, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap 12
Kp
3+ 1+ 4- 2o 1- 2- 2+ 4-
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- SE W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 22 10cm flux: 83 Flare: 13/23.9 Ca: 7.0 Ip: 0 Ia: 2
Solar Regions
(14732) S25
Sunspots
(19776) S26


Apr. 15, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1n/26
Bursts
cm
dm
m
noise storm
Dkm
SID
X-Rays
Ap 10
Kp
3+ 4- 3o 2- 2o 1o 1- 2-
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- SE- W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 34 10cm flux: 86 Flare: 33/22.6 Ca: 9.4 Ip: 0 Ia: 3
Solar Regions
(14728) N31 14727 S25
Sunspots
19773 S25 (ap)3


Apr. 16, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
1n/26
1b/26
Bursts
cm
dm
m
noise storm
Dkm
SID
X-Rays
Ap 17
Kp
1+ 3+ 2o 1+ 3+ 4o 4+ 4-
sc
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- SE W. Limb 7 days later: NW- no data SW- no data
Indices
Rz: 33 10cm flux: 83 Flare: 113/24.0 Ca: 12.1 Ip: 0 Ia: 2
Solar Regions
(14730) N24
Sunspots
(19775) N26 (ap)2

Apr. 17, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES: ← 1b/26 — 1n/26

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 9 — Kp: 3+ 3- 2+ 2+ 1+ 1+ 2o 2o — sc

Aurora: USSR, W.E.

Cosmic Rays

Green Corona: E. Limb 7 days earlier: NE- SE- moderately bright W. Limb 7 days later: NW- no data SW- no data

Indices: Rz: 32 10cm flux: 83 Flare: 50/22.5 Ca: 9.9 Ip: 0 Ia: 4

Solar Regions: (14724) N26

Sunspots

Apr. 18, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap8 010A — Kp: 2o 2- 1- 2+ 3- 3o 2o 2- — sc

Aurora: USSR, W.E.

Cosmic Rays

Green Corona: E. Limb 7 days earlier: NE- SE moderately bright W. Limb 7 days later: NW- no data SW- no data

Indices: Rz: 29 10cm flux: 80 Flare: 6/22.0 Ca: 11.8 Ip: 0 Ia: 1

Solar Regions: 14726 S22

Sunspots: 19771 S19 (γ)4

Apr. 19, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES: — 1n/26 — 1n/26

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap48 01 — Kp: 3+ 6- 6+ 6- 5o 4+ 4- 5- — sc: ▲0106(10)

Aurora: USSR, W.E.

Cosmic Rays

Green Corona: E. Limb 7 days earlier: NE- SE- moderately bright W. Limb 7 days later: NW- SW-moderately bright

Indices: Rz: 22 10cm flux: 79 Flare: 62/21.3 Ca: 11.3 Ip: 0 Ia: 5

Solar Regions: (14731) N09

Sunspots

Apr. 20, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap28 05 — Kp: 4+ 4- 4+ 5- 3o 5o 3+ 3o — sc

Aurora: USSR, W.E.

Cosmic Rays

Green Corona: E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- no data SW- no data

Indices: Rz: 12 10cm flux: 80 Flare: 12/22.3 Ca: 9.2 Ip: 0 Ia: 6

Solar Regions

Sunspots

Apr. 21, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 12 — Kp: 3+ 3o 4- 2o 1+ 2- 3- 2+ — sc

Aurora: USSR, W.E.

Cosmic Rays

Green Corona — E. Limb 7 days earlier: NE- no data SE- no data — W. Limb 7 days later: NW- no data SW- no data

Indices — Rz: 20 10cm flux: 80 Flare: 28/24.0 Ca: 7.7 Ip: 0 Ia: 3

Solar Regions

Sunspots

Apr. 22, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 6 Q8 — Kp: 2- 2- 3- 1o 1- 2- 2- 0+ — sc

Aurora: USSR, W.E.

Cosmic Rays

Green Corona — E. Limb 7 days earlier: NE- no data SE no data — W. Limb 7 days later: NW- SW-

Indices — Rz: 19 10cm flux: 79 Flare: 14/23.9 Ca: no data Ip: 0 Ia: 3

Solar Regions — (14739) N05

Sunspots

Apr. 23, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 5 Q6 — Kp: 1- 2o 2- 1+ 1+ 1o 2- 2- — sc

Aurora: USSR, W.E.

Cosmic Rays

Green Corona — E. Limb 7 days earlier: NE- no data SE- no data — W. Limb 7 days later: NW- SW-

Indices — Rz: 18 10cm flux: 77 Flare: 1/23.0 Ca: no data Ip: 0 Ia: 0

Solar Regions — (14740) S22

Sunspots

Apr. 24, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 11 — Kp: 2o 1+ 1+ 3- 2+ 4o 3- 3- — sc

Aurora: USSR, W.E.

Cosmic Rays

Green Corona — E. Limb 7 days earlier: NE- no data SE no data — W. Limb 7 days later: NW- SW-

Indices — Rz: 8 10cm flux: 76 Flare: 0/23.0 Ca: 3.6 Ip: 0 Ia: 0

Solar Regions — (14735) N29

Sunspots

Apr. 25, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 22 — Kp: 6- 5o 4- 3o 1+ 2o 1o 1+ — sc:

Aurora: USSR, W.E.

Cosmic Rays

Green Corona

Indices: E. Limb 7 days earlier: NE- no data; SE- no data; W. Limb 7 days later: NW-; SW-
Rz: 0; 10cm flux: 76; Flare: 0/20.6; Ca: no data; Ip: 0; Ia: 4

Solar Regions

Sunspots

Apr. 26, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 4 Q2 — Kp: 1+ 1+ 1+ 1o 1- 1+ 1- 1- — sc:

Aurora: USSR, W.E.

Cosmic Rays

Green Corona

Indices: E. Limb 7 days earlier: NE- no data; SE no data; W. Limb 7 days later: NW- no data; SW- no data
Rz: 14; 10cm flux: 74; Flare: 2/22.9; Ca: 3.7; Ip: 0; Ia: 0

Solar Regions: (14745) S45

Sunspots

Apr. 27, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 4 Q1 — Kp: 1+ 1+ 1- 1+ 1o 1- 0+ 1o — sc:

Aurora: USSR, W.E.

Cosmic Rays

Green Corona

Indices: E. Limb 7 days earlier: NE- no data; SE- no data; W. Limb 7 days later: NW- no data; SW- no data
Rz: 8; 10cm flux: 74; Flare: 0/21.6; Ca: 6.1; Ip: 0; Ia: 0

Solar Regions: (14736) N15; (14752) N01

Sunspots

Apr. 28, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FLARES

Bursts: cm, dm, m, Dkm

SID

X-Rays

Ap 4 Q4 — Kp: 1o 1o 0+ 1- 0+ 1+ 2o 2+ — sc:

Aurora: USSR, W.E.

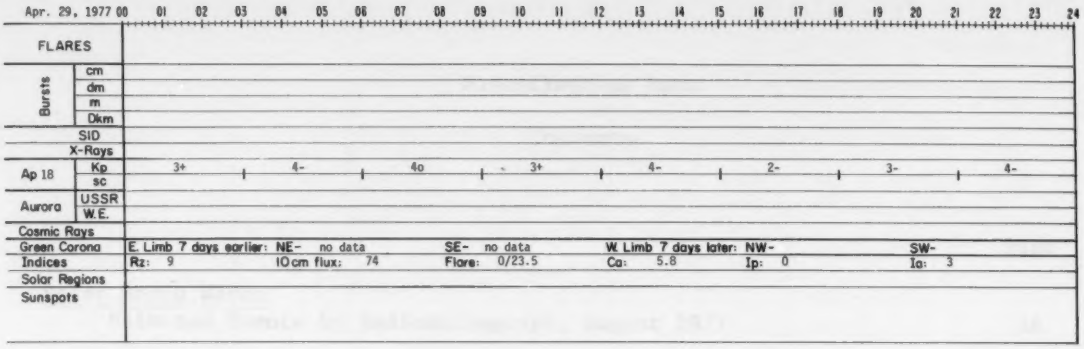
Cosmic Rays

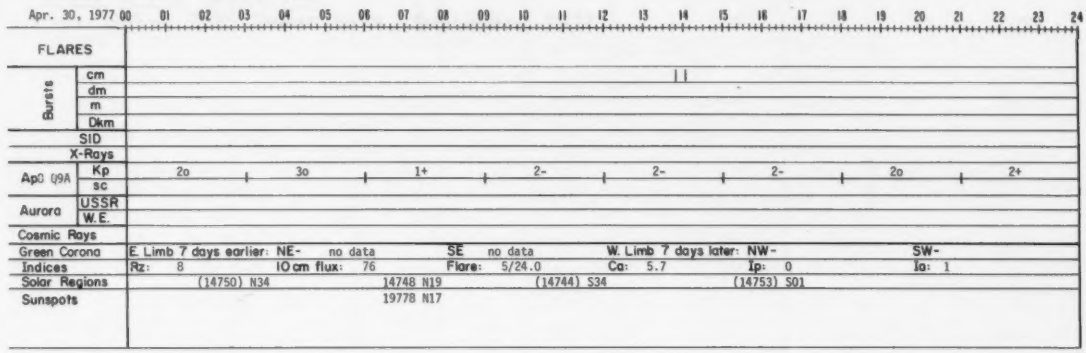
Green Corona

Indices: E. Limb 7 days earlier: NE- no data; SE no data; W. Limb 7 days later: NW- no data; SW- no data
Rz: 16; 10cm flux: 73; Flare: 0/20.7; Ca: 6.4; Ip: 0; Ia: 0

Solar Regions: (14756) S27; 14737 N27; (14757) N08

Sunspots: S21




Apr. 30, 1977 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
FLARES
Bursts
cm
dm
m
Dkm
SID
X-Rays
Ap0 09A
Kp
sc
2o 3o 1+ 2- 2- 2- 2o 2+
Aurora
USSR
W.E.
Cosmic Rays
Green Corona
E. Limb 7 days earlier: NE- no data SE no data W. Limb 7 days later: NW- SW-
Indices
Rz: 8 10cm flux: 76 Flare: 5/24.0 Ca: 5.7 Ip: 0 Ia: 1
Solar Regions
(14750) N34 14748 N19 (14744) S34 (14753) S01
Sunspots
19778 N17

REGIONAL FLARE INDEX
INCLUDES ALL FLARES

MC MATH PLAGE NO.	LAT	CMP DATE	DATE FIRST FLARE	DATE LAST FLARE	FLARE-INDEX SUM	FLARE-INDEX MEAN	TOTAL NO. OF FLARES
14717	N20	77/04/01.6	77/04/05	77/04/07	8.29	2.76	4
14713	N27	77/04/09.4	77/04/04	77/04/04	0.00	0.00	1
14726	S22	77/04/19.0	77/04/11	77/04/23	376.59	28.97	65

Note:
Because of differences in method of calculation, the dates of Central Meridian Passage for the McMath Plage Regions vary somewhat from those given elsewhere. Any region not listed here produced no flares during its disk passage.

Miscellaneous Data

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SELECTED SOLAR EVENTS

AUGUST 1977

Culgoora

UT Date 1977 AUGUST	HELIOGRAPH EVENT							Spectral Type	REMARKS
	Start (UT)	End (UT)	Freq. (MHz)	Positions: Central Dist. ($R_\odot$)	Positions: Position Angle (Deg.)	Polarization	Intensity (1-3)		
6	0240	0450	160	.8	45	L	1	I	This region was present as an unpolarized source on 7 August
21	0113	0206	160	1.0	300	L	1	I	This type I region persisted until 24 August
21	2250	2252	43.25		320		3)		
			80	1.1	310	-	3)	IIIG, V, U	*
			160		300		1		
21/22	2330	0140	160	.9	250	r	1)	I	Both regions continued until end of observations
				1.0	300	L	1)		
22	0122	0124	43.25	.8	265		3		
			80	.8	260	-	2	IIIG	*
			160	.9	250		2		
26	0204	0207	160	.8	120	L	1	I	This region persisted until end of observations on 28 August
27	0044	0048	43.25				3		
			80	.5	150	-	2	IIIG, V	*
			160				2		
28	0252	0300	43.25	.7	120		3		
			80	.9	140	-	2	IIIGG	
			160	.9	140		2		
29	0400	0520	160	.9	140	L	1	I	This region persisted until 30 August

Days without Heliograph observations: NIL

* Other type IIIs observed at same position during the day.

SOLAR X-RAYS BY SATELLITE

GOES

SEPTEMBER 1977

The lack of detailed data for this month is due to a computer failure.

1-8Å DATA

DATE	BEGIN	MAX	END	CLASS
07	2222	2240	2314	X2
09	1635	1642	1648	X2
16	2228	2302	2332	M5
18	0017	0045	0110	M2
19	1026	1054	1111	X2
20	0253	0355	0419	M2
25	1331	1349	1405	M1
26	0018	0024	0027	M1
26	0130	0147	0200	M1

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